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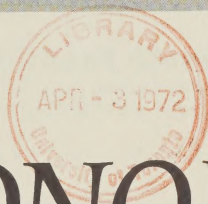
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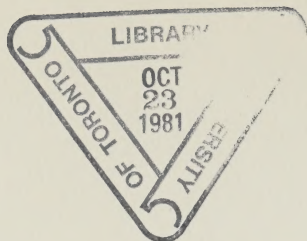


SPRING OUTLOOK 1972

**APRIL 1972
VOLUME 7 NUMBER 1**

HON. H. A. OLSON, MINISTER — S. B. WILLIAMS, DEPUTY MINISTER

ECONOMICS BRANCH | CANADA DEPARTMENT OF AGRICULTURE



Canadian Farm Economics is published bi-monthly by the Economics Branch, Canada Department of Agriculture, Sir John Carling Building, Ottawa, and is based on material prepared by economists of the Economics Branch.

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FOREWORD

The purpose of this special issue of *Canadian Farm Economics* is to give the current outlook for the major farm commodities. These reports complement the information given at the Canadian Agricultural Outlook Conference in November, 1971. The analyses are based on information available prior to March 1, 1972.

These reports are the result of joint efforts by outlook economists in the Economics Branch and product specialists in the Market Information Section and in the Production and Marketing Branch of the Canada Department of Agriculture. Acknowledgment is also given to the valuable cooperation of people in other departments of governments and their agencies, farm organizations and agribusiness groups, especially Industry, Trade and Commerce, Statistics Canada and the Canadian Dairy Commission.

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Ottawa, Canada,
March, 1972.

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WHEAT
J.S. Carmichael

WORLD SITUATION AND OUTLOOK

World Production and Supplies 1971-72

Estimates of world production (excluding the Peoples' Republic of China) for 1971-72 indicate a record crop — 308 million metric tons (11.3 billion bu), seven percent higher than in 1970-71. All main grain growing areas in the world contributed to the increase except the U.S.S.R. where production was estimated to be down five percent. The largest regional increase was in North America where larger acreage and better yields led to an increase of 23 percent. In the E.E.C. and Britain, there was an increase of 15 percent. In India, high yielding varieties contributed to an increase of 15 percent over 1970 and resulted in discontinuation of all food grain imports on January 1, 1972. Australia and Argentina increased production to just over 300 million and 190 million bushels. These are sizeable crops in terms of 1970-71 production but still low relative to earlier years. Main drought areas during 1971-72 were Mexico and the Near East (including Iraq, Iran, and Afghanistan), but Turkey had a bumper crop. In the seven main exporting countries, production was up 650 million bushels, more than offsetting a reduction of 580 million bushels in stocks.

World export trade is expected to be divided among more countries in 1971-72. The E.E.C. will have larger quantities available for export. Also larger supplies are available in some small export countries including Turkey, Greece and Spain. World trade in wheat declined in the early months of

1971-72 with exports to West Europe at little more than half the previous year. Britain's requirements for the year will likely be down one million tons, and the E.E.C., 1.3 million. It appears likely that the U.S.A. will be the main losing exporter, partly on account of dock strikes. Exports from the U.S.A. from July to December 1971, were down 22 percent from 1970. Of considerable significance in the total wheat sales picture has been Canada's sale to the U.S.S.R. of 3.5 million metric tons and to the Peoples' Republic of China of three million metric tons. Exports from Australia and the U.S.S.R. appear likely to be down in 1971-72 with Argentina at about the same low level as in the previous year.

In total, 1971-72 is a year of increasing production and decreasing export requirements.

World Outlook for 1972-73

Many uncertainties surround the balance between supply and demand in any given year 1972-73 is no exception. Some countries such as Canada, the United States and Australia have attempted to keep surplus under control in recent years, but there are indications that world surpluses may be rebuilding. Stocks of wheat in the seven main exporting countries are likely to increase by more than 200 million bushels to about 2.055 billion bushels by July 31, 1972 (1970-71 year end - 1.835 billion, 1969-70 2.422 billion).

It is too early to have good indications of 1972-73 production. However, in the United States the first production forecast for the 1972 winter wheat crop indicates an 11 percent increase to almost 1.3 billion bushels. Spring wheat acreage this year may be lower because of incentives to increase "set-aside acreage". First estimates of acreage were about 12 million acres compared with 13 million acres last year. In France initial estimates indicated wheat acreage would be down by six percent. The U.S.S.R. has reported heavy winter kill on crops sown last fall.

If, as appears probable, total world supplies in 1972-73 are higher than this year, the competitive climate prevailing this year will likely continue with prices not likely to be much different from current low levels. The possibilities of stockpiling in some countries could lead to some restraint in price cutting, but large world supplies would in any even work against price increases.

CANADA

Outlook for 1971-72

Canadian wheat production in 1971 was estimated at 524 million bushels. Of this amount 14 million bushels was winter wheat and 60.5 million bushels was durum. Prairie production increased by more than 60 percent to 504 million bushels from 1970. Production in 1970, LIFT year, was 312 million bushels. Stocks on July 31, 1971 were down for the first time since 1966-67. The billion bushel stocks were reduced by a quarter to 750 million bushels. Because of larger production, supplies were down from 1970 by only 70 million bushels to 1,273 million bushels. Durum stocks at 60 million bushels, were down after two years of 80 or more million bushel stocks. Ontario winter wheat was down in 1971 to 14 million bushels compare to 15.6 million the year before.

Overseas clearances of wheat (excluding durum) half way through the crop year were 230 million bushels compared to 173 at the same time last year. In spite of the general downward trend in world exports, Canadian exports (not including durum) are likely to be about 65-70 million bushels more than last year and reach almost 450 million bushels. Large sales to the U.S.S.R. and more recently 118 million bushels to China, have formed a significant part of the total. Exports of durum at 50 million bushels or more could mean total wheat exports of 500 million bushels. This level of exports has only been exceeded on three occasions, in 1963-64, 1965-66 and 1966-67. On the other hand, domestic handlings by the Wheat Board during the first six months of the crop year, were several million bushels less than those during the same months the previous crop year.

With the heavy supplies and reduced demand, international prices fell sharply in the late summer of 1971. Since then prices have remained stable but at relatively low levels, averaging \$1.65-\$1.66 for Number 1 C.W. Red Spring 14 percent basis in store Thunder Bay. Prices will likely remain steady the rest of the crop year.

Durum wheat disposition for 1971-72, with 55 million bushels of exports and 20-25 million bushels for domestic use, will exceed 1971 disposition by almost 20 million bushels.

The wheat flour outlook for the rest of 1971-72 is little changed from 1970-71 with expected domestic utilization of 65 million bushels. Exports for the first five months of the crop year were a little higher than last year and could slightly exceed 25 million bushels.

The outlook for disposition of the 1971 crop of 14 million bushels of Ontario winter wheat is for about nine million bushels to go into domestic food channels with the rest to exports, except for a small amount for feed and carryover.

Total stocks of all wheat on July 31, 1972 could be down to about 600 million bushels, about 150 million below the previous year.

Outlook Canada 1972-73

In 1972-73 Canada will be competing against many other countries for possibly reduced markets. While Japan and Britain are important markets for Canada, in recent years large Canadian exports of wheat have been dependent on the requirements of Russia and the Peoples' Republic of China. These sales have not assumed a definite pattern and this creates difficulties in forecasting exports with precision.

The most recent Russian sale, about 130 million bushels with options for about 55 million additional bushels, will mean a continued movement of wheat to the U.S.S.R. until next July and through the 1972-73 crop year. Thus exports are likely to again exceed 400 million bushels for ordinary wheat and 50 million for durum during 1972-73.

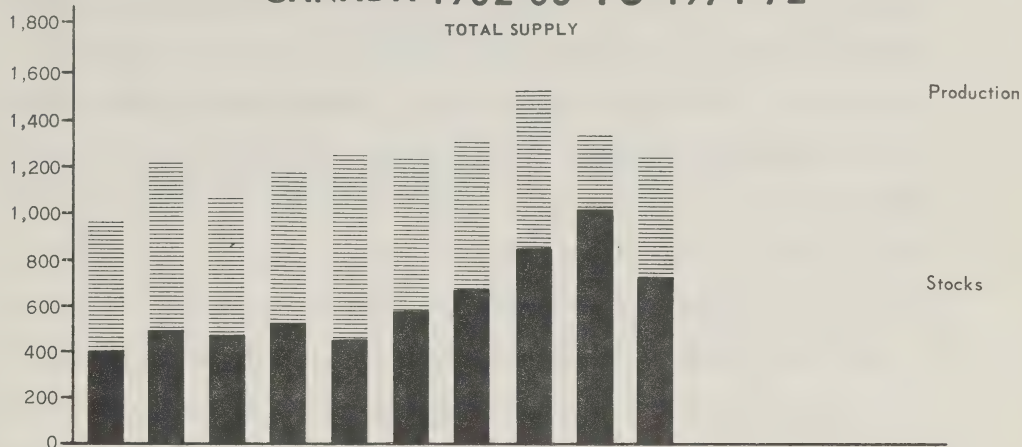
World prices are likely to remain low, however, with extra consumption requirements likely to be matched by higher world production. Some increase in returns to farmers will result from introduction of the two-price system involving payment of \$3.00 per bushel (No. 1 C.W.R.S.) for wheat used for domestic purposes.

While the total disappearance of wheat in 1972-73 may be about 600 million bushels, stocks of wheat to start the year will probably be equal to that amount and lower stock levels would still be desirable in view of current low world prices. A desirable acreage in Western Canada would not exceed 19 million acres, of which perhaps three million would be in durum. Last year's plantings were 18.7 million acres.

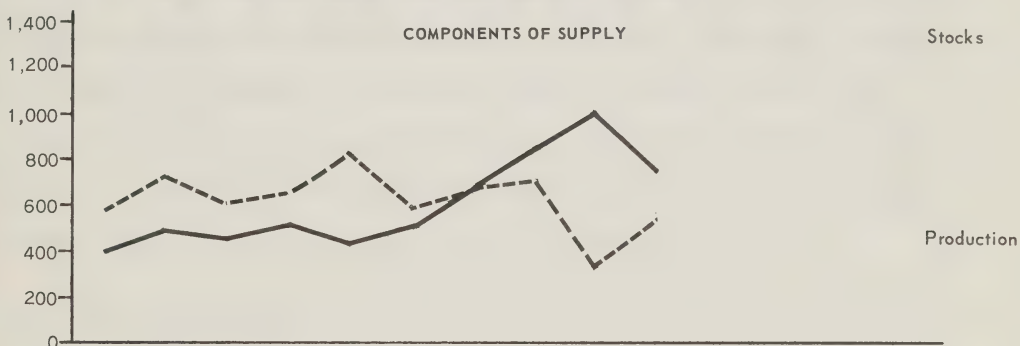
WHEAT – SUPPLY & DISPOSITION – CANADA 1962-63 TO 1971-72

Million
Bushels

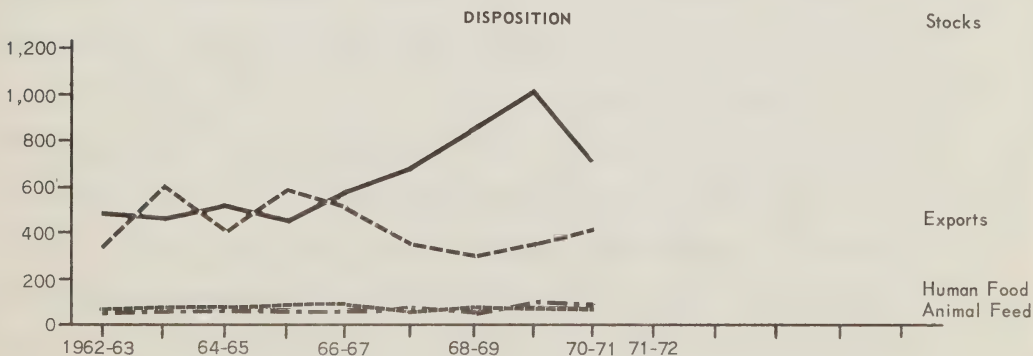
TOTAL SUPPLY



COMPONENTS OF SUPPLY



DISPOSITION



Initial prices for wheat have been announced at \$1.46 a bushel (No. 1 C.W.R.S., basis in store Vancouver or Thunder Bay) and minimum estimated quotas of eight to nine bushels per assigned acre for both ordinary and durum wheat. Winter wheat supplies appear likely to be well above last year with good initial growth on an estimated eight percent more, or 405 thousand acres.

FEED GRAINS

J.S. Carmichael

WORLD SITUATION AND OUTLOOK

World Production and Supplies 1971-72

World production of corn, barley, oats and rye was larger in 1971-72 than in 1970-71. Production of corn, the world's main feed grain, increased to 293 million metric tons. This was an increase of about 50 million metric tons. The United States contributed more than 60 percent of the increase from its record crop of about 140 million tons (5.5 billion bushels). Barley production in calendar year 1971-72 (excluding the People's Republic of China) was estimated at 120 million tons (six billion bushels), an increase of eight percent (almost 10 million tons) from 1970-71. Oat production was two million tons higher at 54 million tons and rye production almost three million tons higher at about 30 million tons.

While the main increase in feed grain production was American corn, the increase in Canadian barley from 416 to 655 million bushels was also of importance. Australia tripled barley production to 128 million bushels compared to 36 million bushels in 1967-68. In addition, substantial increases in production of feed occurred in the EEC. Production in 1971 showed a 14 percent increase over 1970, a considerable part of which was an increase in corn. Britain and other parts of Western Europe also had increases in production because of higher yields and larger acreages. World acreage of corn, barley and rye were larger in 1971 than in 1970, but oat acreage was smaller.

World supplies of these four feed grains in 1971-72 were not increased by the full extent of the additional 65 million tons or more grown since stocks, particularly of corn, were smaller on July 31, 1971 compared with a year earlier. Corn stocks were smaller by almost eight million tons and barley by more than three million tons. Oat stocks were about the same as the year before and rye stocks a little larger.

Prospects for disposing of as much grain as last year (46 million tons) appeared dim early in the crop year. However, by late fall of 1971 indications were that exports might exceed those of the previous crop year, although at relatively lower prices. An attempt is being made in the U.S.S.R. to increase the consumption of meat, by establishing specialized poultry and livestock farms and intercollective farm mixing plants. The U.S.S.R. this crop year has made feed grain purchases from the U.S., France, Thailand and Sweden. Increased imports are expected for the drought-stricken Middle East and some African countries. Although Western European requirements are lower, good demand for feed grain still exists there.

Additional world demand in 1971-72, however, falls far short of additional world supplies.

World Outlook 1972-73

Supplies for 1972-73 do not appear cumbersome apart from those of the United States. Stocks in the E.E.C. are not expected to be higher on July 1, 1972 than they were at July 1, 1971. In the United States while the rate of feeding of corn is sharply higher than last year, stocks of corn on January 1, 1972, at 3.5 billion bushels, were 770 million bushels larger than a year before.

Sorghum stocks were sharply higher, rye and barley stocks were slightly higher than the year before, and oat stocks were moderately lower. U.S. feed grain stocks at the end of the year are likely to be well above levels at the start of the year, largely due to the corn situation.

In production, on the other hand, the United States is taking steps to see that production and supplies are down from last year's record levels. The goal is to reduce corn production from 5.5 billion to 4.5 billion bushels. To influence achievement of this goal, the corn-sorghum set aside will be increased from 20 to 25 percent of the feed grain base. Voluntary diversions will be allowed for an additional 10 percent, and still additional acreage may be considered after intentions are known in March. Indicated acreages prior to official intentions estimates in March were for reductions from last year of four percent for corn, (only half the desired amount of reduction) seven percent for sorghum, four percent for oats and nine percent for barley.

There is little reason to expect reductions in supplies in other traditional producing countries in 1972-73.

However, demand for meat is accelerating in most countries, particularly in Japan, the U.S.S.R. and other countries in Eastern Europe. In the U.S.S.R. the latest five year food plan projects a 27 percent increase for both meat and eggs but an increase in feed grains of only half that amount, indicating need for still increased feed grain import.

In total and notwithstanding the probability of a high level of supplies generally, it appears that world import requirements should be as high as this year.

If the projected high level of supplies does in fact become available, however, prices cannot be expected to rise significantly from current levels. Much depends on the supply of U.S. corn which is of major significance in world feed grain pricing.

Canadian Outlook 1971-72

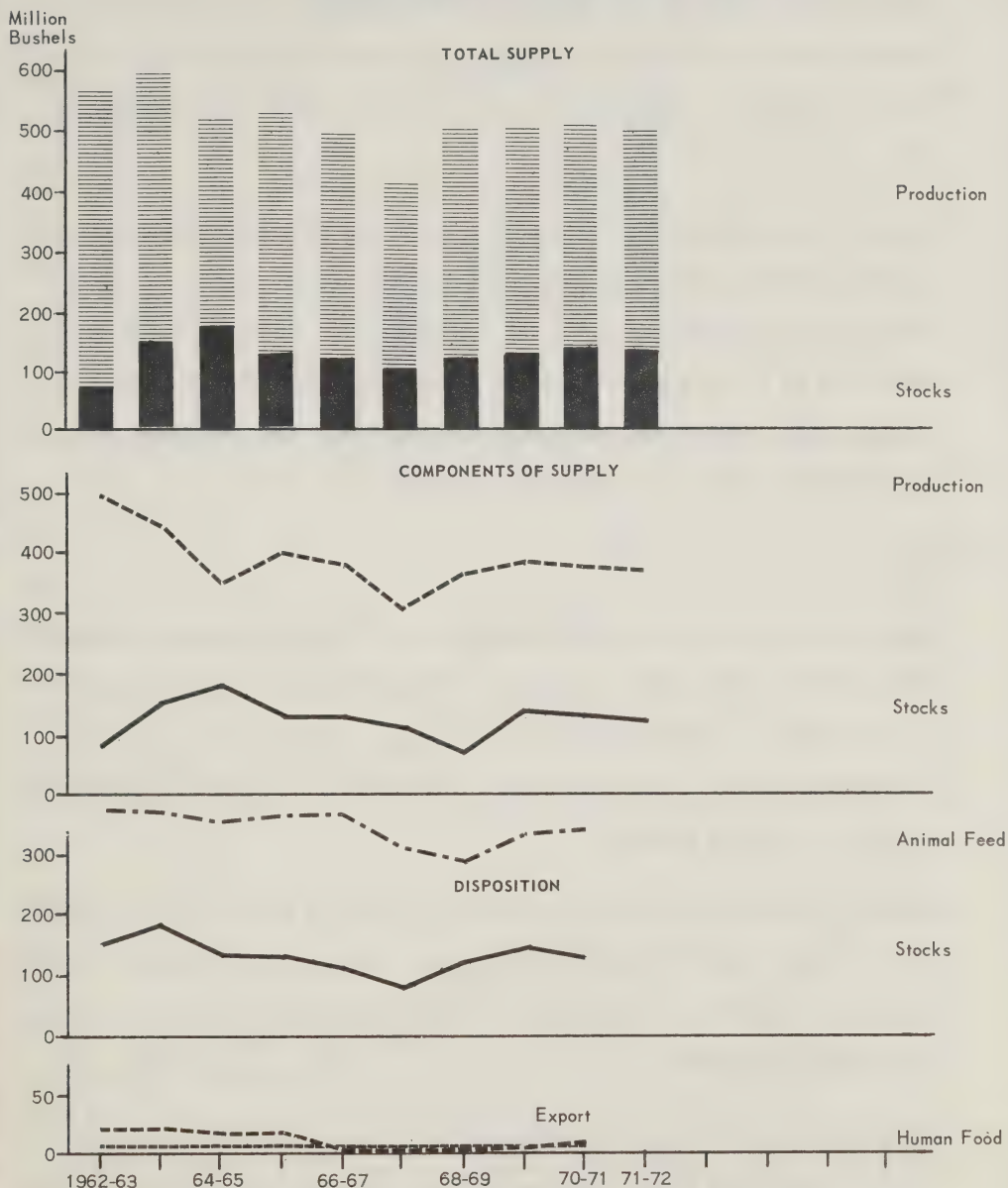
Canadian feed grain production in 1971 was about 25 million metric tons, up more than 25 percent over 1970. Most of the increase was in barley which was higher by 5.2 million metric tons. Small increases occurred in production in all of the feed grains. Feed grain use domestically in 1971-72 is not likely to be much more than in 1970-71, because the reductions in hog and chicken feeding will not be fully offset by more cattle using more grain.

Barley

In 1971, barley production in Canada increased by 240 million bushels to a record 655 million bushels. Even with stocks down to 143 million bushels, total barley supplies reached an unprecedented level of almost 800 million bushels.

By early February, 1972, barley exports were about the same as last crop year, but indications are that by the end of the crop year exports will have reached a record 225 million bushels compared with last year's record 180 million. Although freight-assisted shipments of barley to Eastern Canada and B.C. are down about eight percent in the first six months of the crop year, it is

OATS – SUPPLY & DISPOSITION – CANADA 1962-63 TO 1971-72



expected that total domestic utilization will approximate last year's level of almost 300 million bushels. Malting barley utilization, including exports, has been rising and in 1970-71 maltsters took 48 million bushels. Barley carryover on July 31, 1972 will likely be 275 million bushels or more.

Prices for domestic grain started to drop in mid-1971 with the realization of the large U.S. corn crop. This decline has stopped and Wheat Board asking prices in early 1972 for No. 1 feed barley, in store, Lakehead have been \$1.00 to \$1.05 a bushel. While exports will be heavy for the rest of the crop year, prices will be kept in check by the large supplies and low prices of U.S. corn.

Oats

Production of oats in 1971 was estimated at 377 million bushels, compared to 367 million in 1970. With stocks of 129 million, total supplies were 506 million bushels, about the same as last year. (Supplies of oats were considerably larger in earlier years; for example, in 1942-43 oat supplies reached 670 million bushels.)

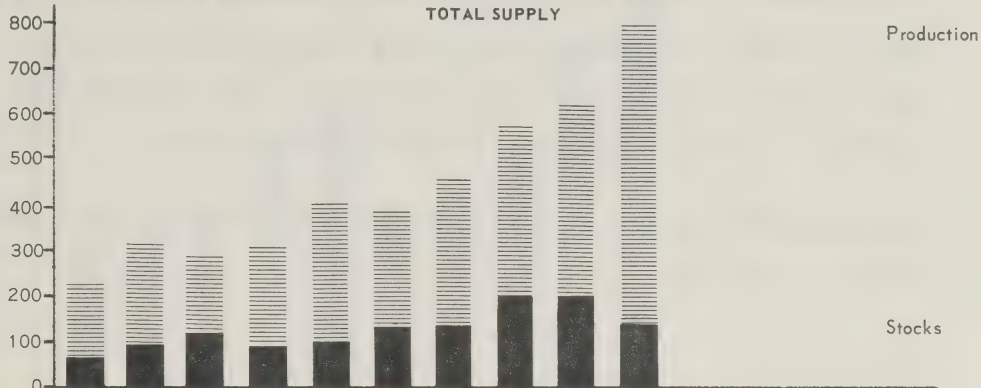
Exports of oats for the first six months of 1971-72 at 3.7 million bushels were less than half of last year's exports. With a heavily loaded handling system, oat exports are not likely to reach last crop year's total of more than 13 million bushels.

Domestic utilization of oats continues to be sizeable and they are mostly used on farms where grown. Shipments from the Wheat Board designated area to Eastern Canada and British Columbia in the first six months of the 1971-72

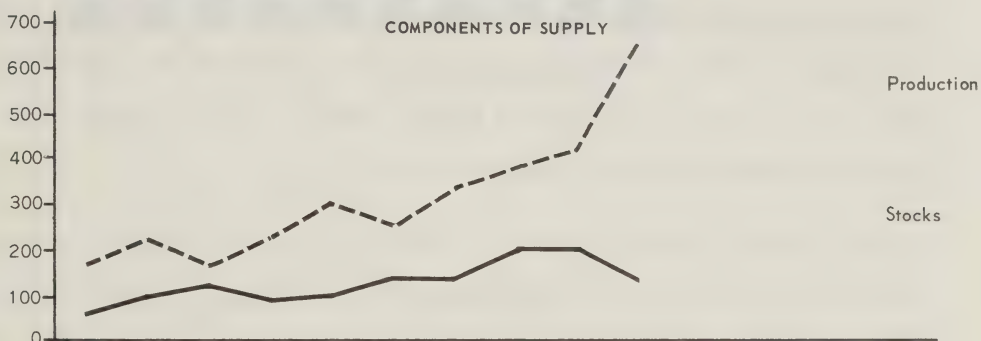
BARLEY – SUPPLY & DISPOSITION – CANADA 1962-63 TO 1971-72

Million
Bushels

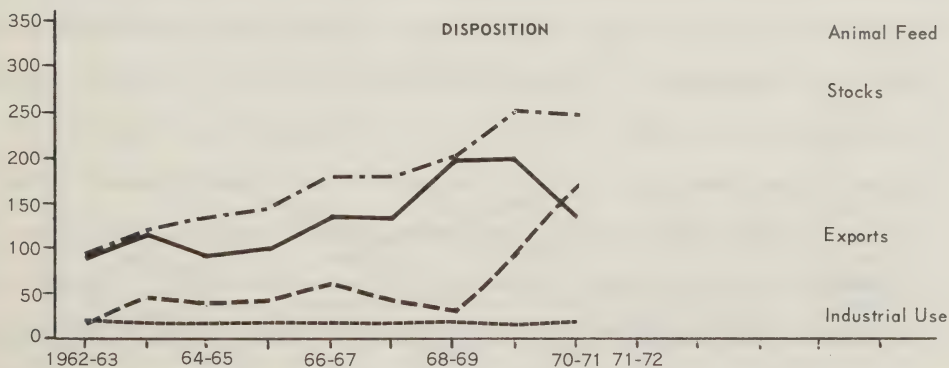
TOTAL SUPPLY



COMPONENTS OF SUPPLY



DISPOSITION



crop year were up by over 20 percent while barley and feed wheat were both lower. In total, domestic use of oats is likely to remain at about 365 million bushels. Prices for oats have followed the same general pattern as barley, falling in late summer and remaining between 60 and 65 cents per bushel for No. 1 feed oats, in store, Thunder Bay. Prices for oats seem unlikely to increase significantly during the current crop year.

Carryover of oats on July 31, 1972 is not likely to exceed the 130 million bushels of last July.

Rye

Canadian production of rye in 1971-72 was up by more than two million bushels to almost 25 million bushels. Stocks increased in each of the last three years and by July 31, 1971 were 12 million bushels. Total supplies were relatively high at nearly 38 million bushels.

Exports for the first six months of 1971-72, 5.6 million bushels, are a little ahead of last year, but indications are for no increase over last year's nine million bushels. On the domestic market, shipments from the designated area to the other provinces are down sharply from last year and it would appear that domestic disappearance is unlikely to exceed last year's 12 million bushels. Carryover thus is likely to increase to 17-20 million bushels by July 31, 1972. Prices of rye through the 1971-72 crop year to date have followed similar patterns to other feed grains, with falling prices last fall, but some recovery in February and early March from lows of 95 cents (No. 1 and 2, Thunder Bay) to between \$1.00 and \$1.07. As with other feed grains, prices are unlikely to move much higher and nearby futures prices for rye at March 1, 1972 are lower than current cash prices.

Million bushels

TOTAL SUPPLY

Production

Stocks

COMPONENTS OF SUPPLY

Production

Stocks

DISPOSITION

Stocks

Animal Feed
Exports
Industrial Use
Human Food

1962-63 64-65 66-67 68-69 70-71 71-72



Corn

In 1971, corn production in Canada was up by seven million bushels over 1970 to 108 million bushels. Carryover in commercial positions was a little over two million bushels. Imports in 1971-72 have continued at low levels with about 4.4 million bushels imported in the first five months. The long term trend toward self-sufficiency appears to be continuing with Ontario already almost self-sufficient.

Some 50 to 55 million bushels of corn out of a total of 80 to 90 million bushels are used for feed on the farms where grown. About 25 million go for food and industrial use. There are some small but increasing exports. It seems likely that most corn will be used by the end of the year but carryover will be a little higher than last crop year.

Prices of corn are closely related to those of the United States and reacted to last year's heavy crop. Some minor recovery occurred in U.S. prices when sales were made to the U.S.S.R. Canadian prices in late February had again weakened slightly to about \$1.15 per bushel (No. 2, Chatham). The abundance of U.S. corn will likely keep Canadian corn prices from more than some slight seasonal improvement until the end of the crop year.

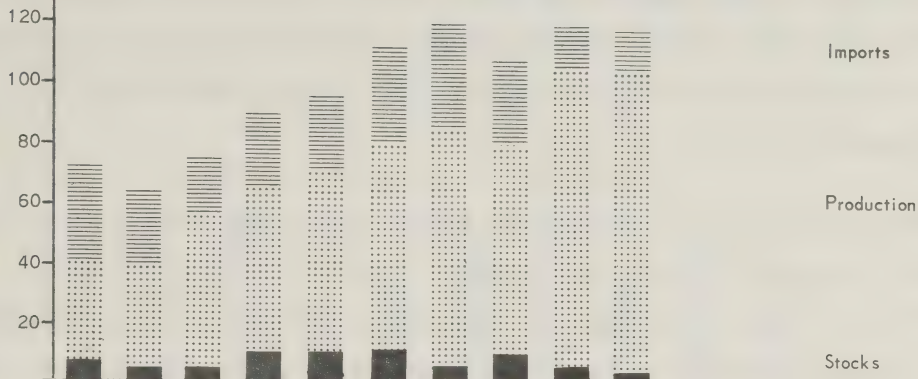
Outlook Canada 1972-73

Perhaps the most significant factor affecting prices of feed grains in 1972-73 will be the heavy U.S. corn stocks at the start of the year. Unless it becomes evident that production will be sizeably lower than the indications from preliminary acreage intentions, prices in the whole feed grain structure will continue at low levels well into crop year 1972-73.

CORN – SUPPLY & DISTRIBUTION – CANADA 1962-63 TO 1971-72

Million
Bushels

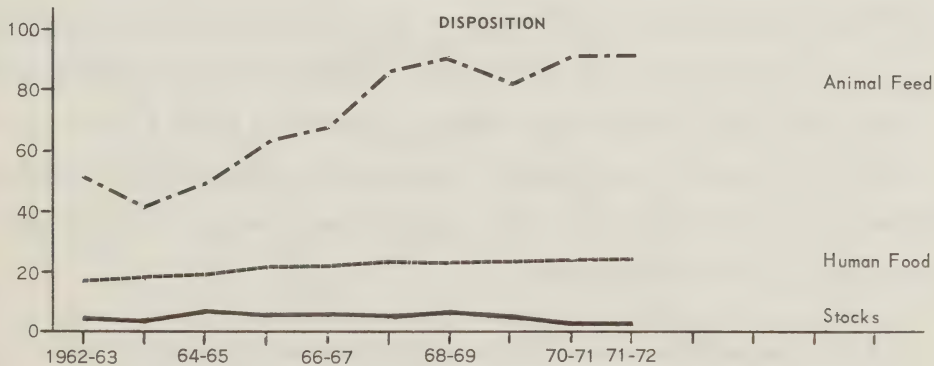
TOTAL SUPPLY



COMPONENTS OF SUPPLY



DISPOSITION



Barley

In spite of large supplies available, the slow but steady increase in demand for feed grains suggests that by pricing competitively it will be possible to come close to matching the exports of 225 million bushels likely to be reached in 1971-72.

With exports likely to approach 225 million bushels and domestic use of 300 million bushels or more, total disposal of barley in 1972-73 should be about the same as this year. To assure ample supplies, it is suggested that acreage for 1972 be increased to 15 million acres in the prairie provinces compared with 14.6 million last year.

Initial payments are set at 91 cents a bushel for No. 3 Canada: Western six row barley, basis in store Thunder Bay, and minimum quotas are estimated at 15-20 bushels per assigned acre.

Oats

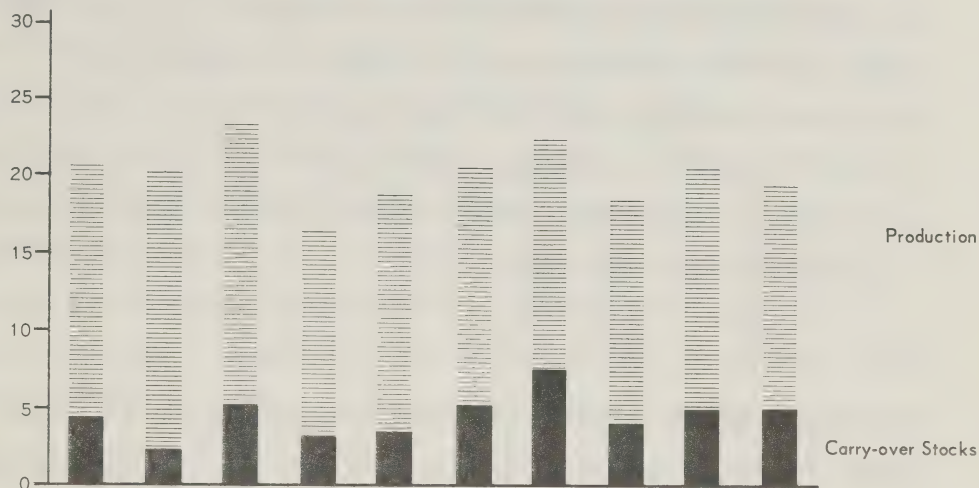
Although feeding of oats on farms where grown or for other domestic feeding is likely to continue at about the same level, it is difficult to see oats in a significant export role in 1972-73. Priority is given to moving other grains with lower transportation costs in relation to value. Five million bushels for exports, 30 million for Canadian Wheat Board domestic disposal and domestic use of 250 million bushels, suggests an acreage of not more than five million for Western Canada.

Initial payments have been set at 60 cents a bushel and minimum quotas are estimated at 10-14 bushels per acre.

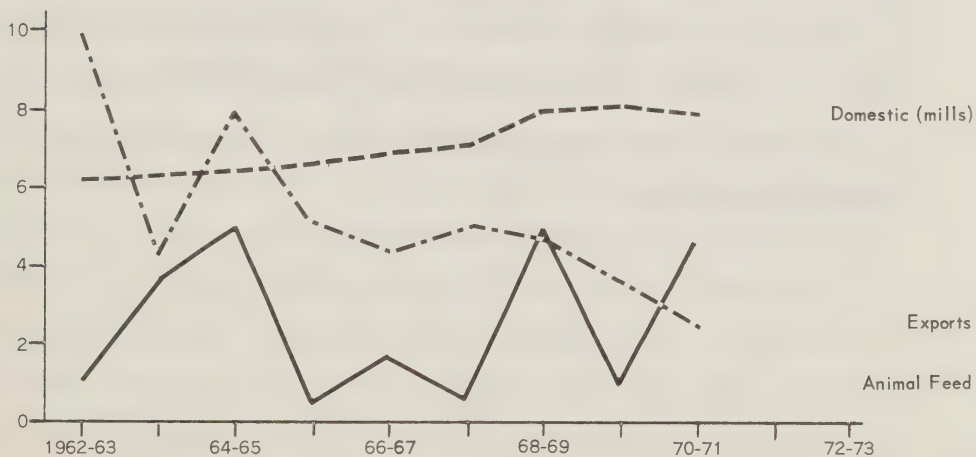
ONTARIO WINTER WHEAT SUPPLY & DISPOSITION 1962-63 TO 1971-72

Million
Bushels

TOTAL SUPPLY



DISPOSITION



ECONOMICS BRANCH

CANADA AGRICULTURE

Rye

Production of rye for domestic use is likely to continue as in the past since it responds well on light soils not suited to other grains. However, the possibilities in the export market are not likely to equal those of a year or two ago since the low level of production in some of the traditional producing countries two years ago is not likely to recur. Even if exports reached 10 million bushels and we used 10 or 11 million bushels domestically, in view of the rising stock level in recent years, one million acres should be more than adequate.

Corn

Prices of grain corn in 1972-73 are likely to be held down by U.S. corn prices. Prices of soybeans on the other hand, have been at relatively high levels, and while some continuation of the upward trend in corn production is likely to continue, the increased acreage might not be very substantial in Ontario with some shift to soybeans. The upward trend in acreage is likely to continue in Quebec and to some extent in Manitoba.

A total increase in corn production of 10 percent in 1972-73 appears to be a distinct possibility.

OILSEEDS

J.S. Carmichael

WORLD SITUATION AND OUTLOOK 1971-72

During the 1971-72 crop year an unusual mixture of bullish and bearish factors affected the world oilseed market. In the late summer and early fall of 1971 prices were high and world supplies, although rising, did not appear likely to burden the market. A number of factors combined in mid-fall to drive the market down. A large supply of palm oil and the biggest supply of fish oil in a number of years began to weigh on the market. Canada's big rapeseed crop was important and it appeared that increased crops of groundnuts in Africa, and sunflower in the USSR, eastern Europe and Argentina would also be significant factors in the world supply. Many expected that stocks of oils and fats would build up sharply.

The principal reaction to these expectations was that the price of the lower rated types of oils or fats declined sharply. These included palm oil, copra, coconut oil and fish oil. Part of the problem with these products may be that storage is not adequate in some countries to permit orderly marketing. Thus a small oversupply caused some sharp price declines and other prices were dragged down as well. On the other hand, premium oils such as soybeans, sunflower seed and groundnuts remained at high levels, although sunflower seed prices have fallen considerably. Rapeseed prices, with a very large supply available, have reacted more like the tropical oils and fish oil. While prices last summer were about the same as soybeans, the price spread between rapeseed and soybeans has widened to about 70 cents per bushel in recent months.

Part of the reason for the selective variations between oilseed prices lies in the protein values. World protein is, or shortly will be, in short supply with the trend toward greater livestock feeding. Soybeans with low oil and high meal content have been particularly in demand.

During the first two months of 1972 it became apparent that the oversupply of oils and fats generally has been overstated. U.S. soybean production estimates were cut by 31 million bushels below mid-fall estimates. The USSR and Argentina appear to have much less sunflower seed than expected and the groundnut crops in some of the African countries also appear to be below expectations. As a result, it appears that the expected major increase in stocks at the end of this season will turn out to be not more than a minor one and stocks will still be well below levels of 1968-69.

In face of what seems to be a fairly tight supply-demand situation it could have been expected that by now there would have been more improvements in prices generally. Limited price improvements may very well occur in the last few months of the crop year. A time lag seems to occur before oilseed prices respond to pressures. In addition price relationships among oilseeds seem to be associated more with unusual supply situations of an individual oilseed in spite of the alleged high degree of interchangeability. The rather tight situation in soybeans and sunflower seed suggests the likelihood that other oilseeds will trade better both in quantity and price before the end of the crop year. By the first of March, soybean prices moved up sharply and some improvement occurred in rapeseed prices.

The market for flaxseed differs from edible oilseeds. In response to over-supply, prices have fallen gradually each year since 1968. However, in late 1971 some mild recovery occurred as more was used for feed in Europe. Production was down sharply in each of the three main producing countries, Argentina, the U.S., and Canada, and an over-all stock reduction should occur by the end of the current crop year. Prices have risen above \$2.60 (No. 1 store, Thunder Bay) and should continue firm for the next few months.

WORLD OUTLOOK 1972-73

Only limited information is available on the prospects for oilseeds in 1972-73. Factors which may give some general indication of what may be expected are as follows:

- (1) Palm oil production will be larger and will increase each year for a number of years. Most other production is of an annual nature and probable production cannot be assessed at this time.
- (2) Preliminary indications are for some increase in the vital U.S. soybean crop, but not as much as hoped for by USDA. The indicated increase of 3.7 million acres, to 44.35 million acres, is less than half the increase hoped for. Revisions in plans for feed grain acreage could lead to soybean acreage increases. However, utilization in the United States has been exceeding production for three years and will be very low by next July. Even with depleted stocks, U.S. soybean usage in 1971-72 is expected to be four percent below 1970-71.

- (3) Even if the high price levels of early 1971 have not carried into the later parts of the crop year, the trend toward greater production in oilseeds generally is a natural part of the cycle which peaked in 1971, and for many oilseeds has peaked at five year intervals.
- (4) Generally, stocks of oilseeds to start next crop year will still be relatively low compared with some other years, but ready to climb with any unusual production increase.

The strong possibility exists, therefore, that in 1972-73 competition for world markets may be stronger, with generally weaker prices. The price spreads between different oilseeds may resume the rather wide differences which have characterized the last few months.

Consumption of oils and meals should continue pretty well on the same course as in the past six years — an average annual increase of about 840,000 tons.

In flaxseed with a somewhat improved stock situation on July 31, 1972 a good beginning will have been made to bringing supply and demand more closely in line. If production is kept low by major producers in 1972, later in 1972-73 prices could improve and the market could be in a quite healthy position by the end of the year.

CANADA

OUTLOOK FOR 1971-72

Rapeseed

Production of rapeseed in Canada in 1971-72 was 98.5 million bushels compared with 72.2 million bushels in 1970-71. These figures include dockage so that cleaned rapeseed might amount to about 85 million bushels. Carry in was almost 10 million bushels.

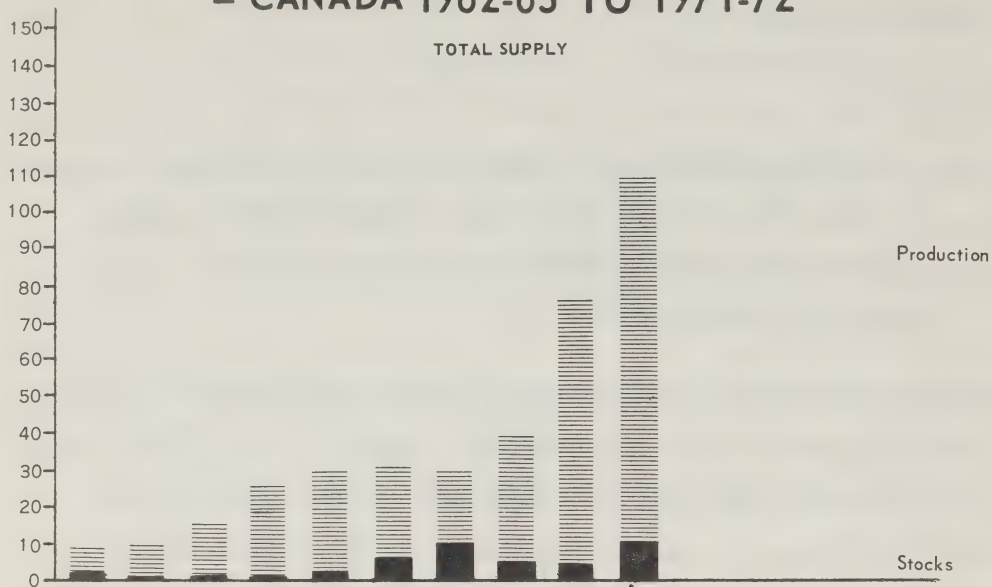
Domestic use during the first six months of 1971-72 was higher — 5.5 million bushels compared to four million last year. Exports, at 21.2 million bushels by the end of the third week of February 1972, are less than half last year's total exports of 46.5 million bushels and very slightly below the 21.5 million bushels of the same time last year. Forward sales during the winter have been lagging but improved marketing prospects for oilseeds generally should bring exports this year to somewhere around last year's levels. Domestic use should increase from 8.5 million last year to about 12 million bushels.

The effects of the elimination of the border tax by EEC countries are not fully apparent. Moreover, with the expected reduction in Japanese tariffs on April 1 it is not expected that imports will improve until then. Also, there have been problems with port congestion and transportation, and earlier in the winter the monetary crisis had an impact on world trade. In addition, this has been a year of decision concerning the use of low erucic acid seed in future years. It appears that low erucic acid seed will be the only seed accepted by the Canadian food industry in the near future and that

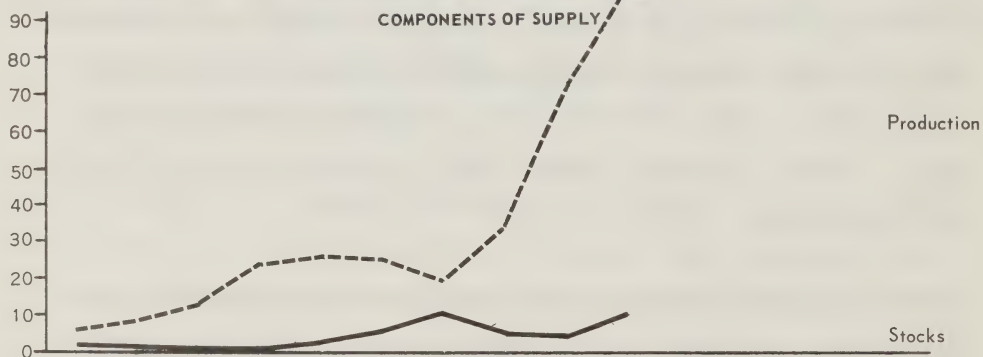
RAPESEED – SUPPLY & DISPOSITION – CANADA 1962-63 TO 1971-72

Million
Bushels

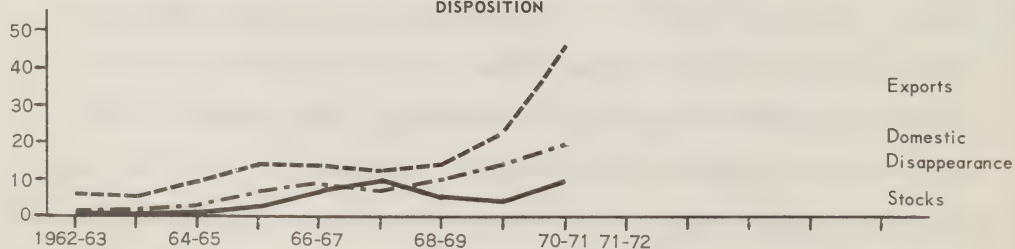
TOTAL SUPPLY



COMPONENTS OF SUPPLY



DISPOSITION



importing countries also are prepared to switch. A complete switch to erucic free varieties is desirable and essential. While the new varieties did not yield as well per acre or in oil content this first year, this does not preclude the probability of early improvement in the same varieties or in new varieties.

Prices of rapeseed have been lower than expected, partly related to difficulties of processors in disposing of the meal when produced in quantity, but prices could improve with a general improvement in oilseed prices. In early March cash prices had risen from early 1972 lows to over \$2.40 a bushel and with Vancouver futures running over \$2.50.

OUTLOOK FOR 1972-73

World demand for edible oilseeds will continue to increase, but the possibility exists that world supplies could increase faster. Hence, prices could be lower. There seems little reason why an improving product such as rapeseed should not sell in greater volume than this year, providing Canadian rapeseed is competitively priced.

Canadian stocks, however, are likely to rise rather sharply with last year's greatly increased crop and may reach 35 million bushels. This suggests that an acreage lower than last year, perhaps between four and five million acres, will produce all the supplies necessary for 1972-73.

Soybeans

Outlook 1971-72

Soybean production in 1972 was 10 million bushels — just below last year's 10.4 million bushels. Acreage was up by 25 thousand to 360 thousand but yields were down due to drought. Crushings of soybeans for the first 11 months of 1971, at 1.3 billion pounds, were 70 million pounds down from the previous year while rapeseed crushings were higher by a little more than 80 million pounds. Exports of soybean oil in 1971, at 97 million pounds, were more than double the previous year while imports at 51 million pounds were little changed. Exports of meal for the year totaled 265 million pounds compared to 332 million in 1970. Imports of meal at 458 million pounds were down about 15 percent from the previous year. Imports of soybeans were slightly behind last year at 15.6 million bushels, compared to 16.3 million in 1970.

Prices of soybeans have been higher this past year than in other recent years and have been closely related to United States bean prices. Throughout most of the 1971-72 crop year, up to mid-February, prices had hovered about the \$3.00 per bushel level (basis No. 2 or better f.o.b. Chatham), but by early March climbed to around \$3.15. Prices are likely to remain fairly steady throughout the last months of the crop year unless it should become evident that the United States will have much larger crop than indicated by first acreage intentions estimates.

Outlook 1972-73

Canadian prices will relate to American prices and these will relate to the supplies available in the United States next fall. If supplies are not substantially more than currently expected they will still be tight relative to demand and prices will likely remain at or near levels of this year even if prices of other oils decline. Since we are still net importers of soybeans it would be desirable to have a sharply increased acreage. Some increase in acreage is likely to occur following relatively high prices for the 1971 crop.

Flaxseed Outlook 1971-72

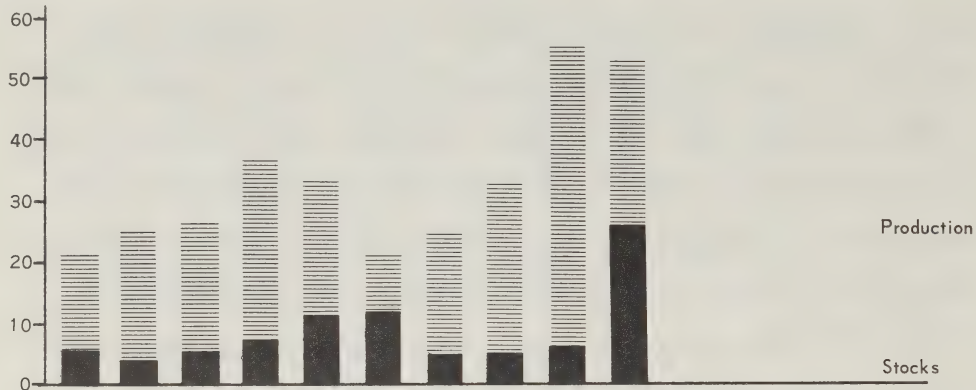
Flaxseed production in 1971-72 was estimated at 25.7 million bushels compared to earlier estimates of 26.8 million. Total supplies were double that amount since carry in stocks amounted to 26.5 million bushels. Supplies in total were a little below those of last year.

Exports have been better than last year, with the first 30 weeks of the 1971-72 crop year showing exports of 15.3 million bushels compared to 10.8 million in 1970-71. At the present rate, exports for the year will reach a little more than 25 million bushels. Industry in Canada takes two to three million bushels, and total domestic use is about seven million bushels. Total disappearance for the crop year therefore could be more than 30 million bushels with a stock reduction of six to seven million bushels. Prices in February and March have risen to between \$2.60 and \$2.70 per bushel (basis No. 1 Thunder Bay) and will likely remain near this relatively low level for the next few months.

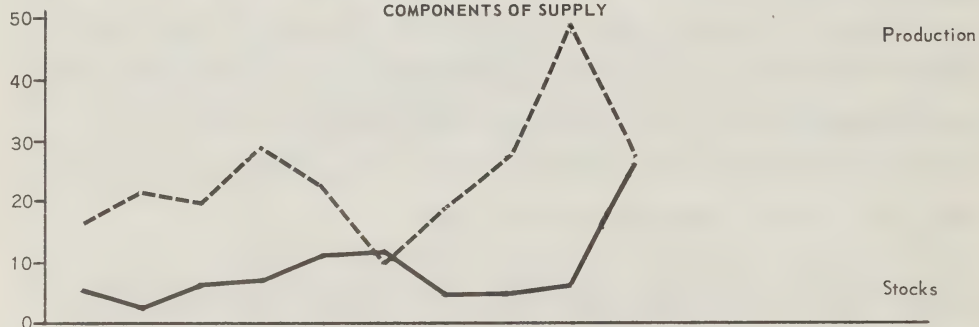
FLAXSEED – SUPPLY & DISPOSITION – CANADA 1962-63 TO 1971-72

Million
Bushels

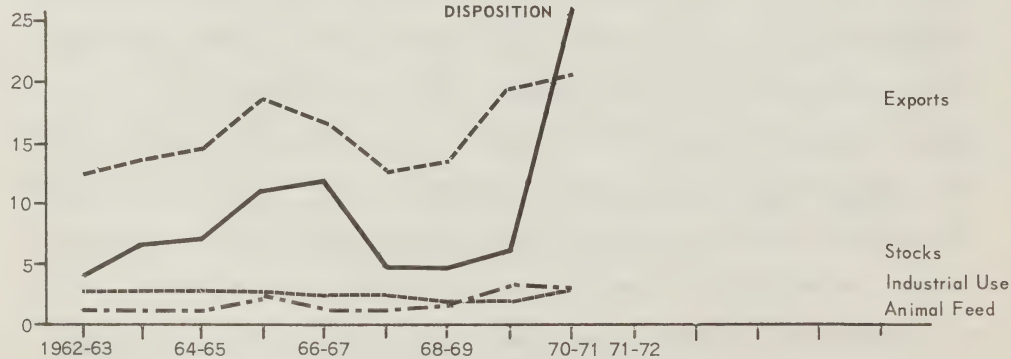
TOTAL SUPPLY



COMPONENTS OF SUPPLY



DISPOSITION



ECONOMICS BRANCH
CANADA AGRICULTURE

Flaxseed Outlook 1972-73

Prices could rise slightly if not substantially in 1972-73 if the downward trend in world production occurs as expected. Sizeable stock reductions from the burdensome current levels could lead to a better balance in world supply and demand by the year-end. The following year could see more substantial improvement in prices.

For the present year an acreage in Western Canada of two million acres should be adequate in light of the stock situation.

Sunflower seed

Sunflower seed production in 1971-72 was 152 million pounds, almost three times that of the previous year. Acreage more than tripled, but yields were down from 785 to 708 pounds an acre. The biggest relative acreage increase was in Saskatchewan where acreage rose from three thousand to 65 thousand acres. The acreage outside Manitoba was largely for export of seed to Japan. Imports of sunflower seed oil have been much smaller than a few years ago. Prices have been relatively high in 1971-72.

For 1972-73 an increased acreage seems likely, perhaps to 350 thousand acres. Prices will remain at fairly high levels unless world prices for oilseeds decline generally.

BEEF

A.M. Boswell

Supply Situation

Federally inspected cattle slaughter was up moderately in North America in 1971 over 1970 - 3.2 percent in Canada, and two percent in the U.S. (Table 1).

TABLE 1 - FEDERALLY INSPECTED CATTLE SLAUGHTER, CANADA AND THE UNITED STATES

	Slaughter '000 head	1971 Change from 1970		1972 (First Six Weeks)	
		Percent	'000 head	Slaughter '000 head	Percent Change From Same Period 1971
British Columbia	39.3	- 36.0	- 22.1	4.5	- 18.3
Alberta	1,016.0	+ 13.5	+ 120.6	126.2	+ 24.4
Saskatchewan	155.7	+ 1.2	+ 1.9	18.0	+ 5.9
Manitoba	425.3	+ 0.7	+ 3.1	46.1	- 7.3
Total WEST	1,636.3	+ 6.8	+ 103.5	194.8	+ 12.1
% Canada	58.7			62.0	
Ontario	915.1	+ 2.0	+ 18.2	98.1	- 8.1
Quebec	198.6	- 16.9	- 40.4	16.1	- 38.8
Maritimes	36.9	+ 14.9	+ 4.8	5.0	+ 25.9
Total EAST	1,150.6	- 1.5	- 17.4	119.2	- 13.0
% Canada	41.3			38.0	
CANADA	2,786.9	+ 3.2	+ 86.1	314.0	+ 1.1
United States	31,419.0	+ 2.0	+ 626.0	3,709.0	- 2.6
North America	34,205.9	+ 2.1	+ 712.1	4,023.0	- 2.5

In the first six weeks of 1972, federally inspected cattle slaughter was up one percent in Canada but down 2.5 percent in the U.S. from the same weeks in 1971. The sharp increase in Western Canada was virtually offset by the sharp decrease in the East. This reflects the drop in feeder cattle movement from the West to the East, primarily to Ontario. For example, in 1967 about 506 thousand Western feeder cattle moved into Eastern feedlots, but in 1971, only about 340 thousand head moved east.

In 1971, the federally inspected kill in Canada and the U.S. totaled 34.2 million head. Canada's proportion was 8.2 percent, Eastern Canada's 3.4 percent, and Western Canada accounted for 4.8 percent. Beef prices in Canada at the producer, wholesale and retail levels reflect the beef supplies of both countries combined.

In Canada, fed cattle slaughter (Choice and Good carcasses) averaged 34,153 head per week in 1971, an increase of 1.1 percent from the 1970 level, and the ninth consecutive year of increase. The increase in fed cattle production in Canada is in response to consumer preference for high quality beef, coupled with rising beef cow numbers, declining exports of live feeder cattle to the U.S., and the growth and development of feedlot finishing.

The recent upsurge in cattle feeding explains most of Canada's increase in beef output since the mid-1960's. From 1965-66 to 1970-71, inspected beef output increased 104.1 million pounds. The increase in carcass weights during this period accounted for about 90 million pounds while the increase from number slaughtered was only about 13 million pounds. While cattle feeding produces more beef from a given cattle inventory, further increases in carcass weights are unlikely to be as great as in recent years.

Beef Trade

Basically, Canada's export of dressed beef and veal are nearly all to the U.S. as boneless beef. The main source of domestic boneless beef cows. In 1965, cow slaughter totaled 843 head but by 1971, had slumped to 628 thousand head. Even though Canada is importing more Oceanic beef,

especially since 1969, domestic cow slaughter has been a key factor underlying Canada's exports and imports of boneless beef over the year.

In 1971, Canadian exports of dressed beef and veal totaled 86.9 million pounds, compared to 90.2 million pounds in 1970 (Table 2). Imports in 1971 were 125.3 million pounds compared to 123.5 in 1970. With the exception of 1968, Canada has been a net importer of dressed beef since 1967. This also is the case for live fed cattle for slaughter from the U.S., which totaled 55,548 head in 1971 and 53,305 head in 1970. In 1971, exports of feeder cattle (15,130 head) and slaughter cattle (11,346 head) were at relatively low levels because domestic prices in 1971 were considerably above the export equivalent to the U.S.

TABLE 2 - CANADA'S DRESSED BEEF AND VEAL TRADE WITH ALL COUNTRIES (PRODUCT WEIGHT)^a

Year	Exports from Canada			Imports to Canada			Canada's Trade Balance
	United States	Others	Total	Oceanic	Others	Total	
	thousand pounds						
1965	71,993	10,712	82,705	4,812	12,399	17,211	+ 65,494
1966	56,437	5,743	62,180	6,796	16,840	23,636	+ 38,544
1967	27,401	4,516	31,917	14,814	22,970	37,784	- 5,867
1968	47,482	6,265	53,747	17,301	16,565	33,866 ^b	+ 19,881
1969	45,910	4,953	50,863	91,391	14,206	105,597 ^b	- 54,734
1970	83,548	6,671	90,219	108,119	15,454	123,573 ^b	- 33,354
1971	80,354	6,621	86,975	87,917	37,393	125,310	- 38,335
Av. 1966-71	56,855	5,755	62,650	54,390	20,571	74,961	- 12,311

a Includes fresh or frozen, cured pickled or salted; excludes imports of corned beef canned which totaled 11.3 million pounds in 1970 and 8.1 million in 1971 and for 1965-69 averaged 10.4 million pounds.

b Excludes imported beef for re-exports from Oceanic countries which amounted to an estimated 20.5 million pounds in 1970 and 12.8 million pounds in 1969. These exports are included in official Canadian import statistics but are excluded in official export data.

Fed Cattle Prices

In 1971, Choice steers at Toronto averaged \$34.30 per cwt, an increase of \$2.05 from the 1970 level (Table 3). With the exception of a slight drop in 1968, Choice steer prices at Toronto have increased every year since 1964 (average \$24.05 per cwt).

TABLE 3 - PRICES FOR CHOICE STEERS AT TORONTO AND OMAHA BY MONTHS, 1970 AND 1971

	Toronto			Omaha			Toronto Over Omaha		
	1970	1971	1972	1970	1971	1972	1970	1971	1972
	Cdn. \$/cwt			U.S. \$/cwt			\$/cwt		
January	31.03	32.07	37.33	28.23	29.11	35.74 ^p	2.80	2.96	1.59
February	32.53	33.77	37.40	29.30	32.23	36.40 ^p	3.23	1.54	1.00
March	33.32	34.00		30.97	31.81		2.35	2.19	
April	33.45	34.26		30.64	32.44		2.81	1.82	
May	33.26	34.33		29.52	32.88		3.74	1.45	
June	32.05	34.25		30.29	32.39		1.76	1.86	
July	32.17	34.27		31.12	32.44		1.05	1.83	
August	31.65	34.46		30.14	33.24		1.51	1.22	
September	31.44	33.80		29.32	32.62		2.12	1.18	
October	30.53	34.22		28.67	32.34		1.86	1.88	
November	31.43	35.31		27.21	33.58		4.22	1.73	
December	31.14	36.47		26.71	34.40		4.43	2.07	
Year	32.25	34.30		29.34	32.42		2.91	1.88	

p Preliminary.

In Canada, fed cattle prices moved to a full "import basis" during the last two months of 1971, and 52,290 fed cattle for immediate slaughter moved into Canada from the U.S. The situation continued in January 1971, with Choice steers at ~~Toronto~~ averaging \$3 per cwt over Omaha and 28,220 live slaughter cattle were imported from the U.S. Since January 1971, prices of fed cattle in Canada have moved off a full "import basis", primarily because of an increase in fed cattle slaughter in Canada.

In both Canada and the U.S., fed cattle prices strengthened between October 1971 and February 1972. Choice steers at Toronto in February this year averaged \$37.40 per 100 pounds, up \$3.18 from October and \$3.63 above a year ago.

Outlook

A brief review of the most recent cattle inventory developments in both Canada and the U.S. is necessary for looking at cattle market prospects for the remainder of 1972.

In Canada total cattle and calves on farms and ranches increased 3.4 percent during 1971, with beef cows up 7.5 percent, steers and calves up 4.4 and 3.4 percent, respectively (Table 4).

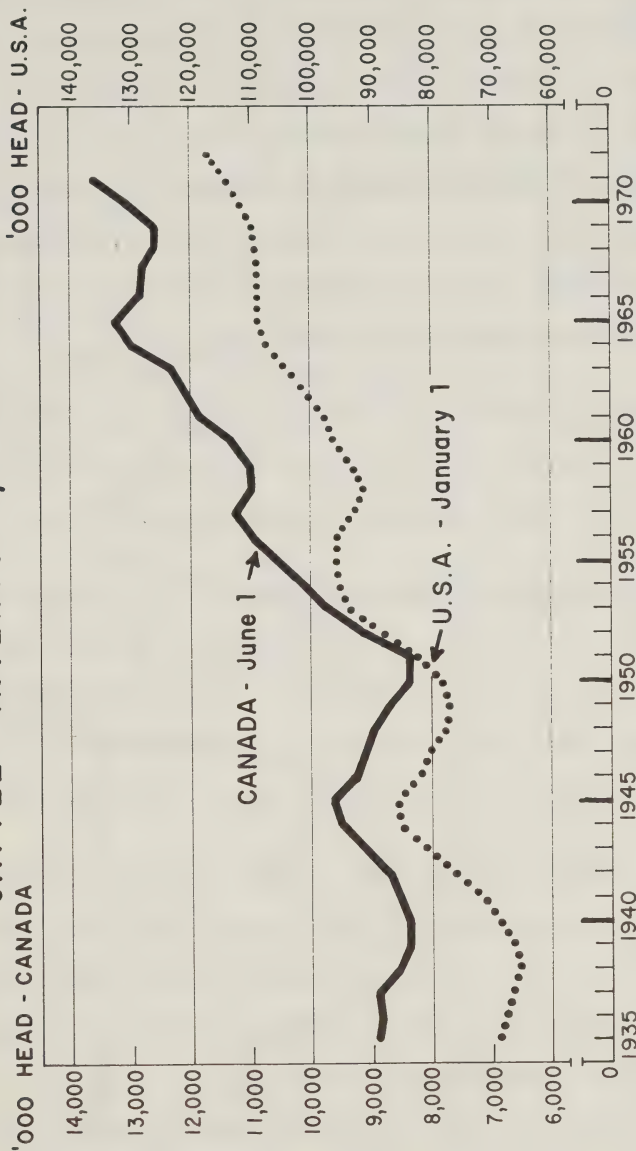
TABLE 4 - CATTLE NUMBERS ON FARMS AND RANCHES, CANADA AND UNITED STATES

	Canada (December 1)				United States (January 1)			
			Change 1970-71				Change 1971-72	
	1970	1971	Percent	Head	1971	1972	Percent	Head
	000's		%	000's	000's		%	000's
Beef cows	3,103.4	3,337.7	+ 7.5	+234.3	37,533	38,725	+ 3.2	+ 1,192
Beef heifers ^a	832.1	959.1	+ 15.3	+127.0	6,475	6,840	+ 5.6	+ 365
Dairy Cows	2,471.0	2,397.0	- 3.0	- 74.0	12,414	12,279	- 1.1	- 135
Dairy heifers ^a	577.3	514.0	- 11.0	- 63.3	3,941	3,942	-	+ 1
Steers	1,222.3	1,275.7	+ 4.4	+ 53.4	15,375	15,711	+ 2.2	+ 336
Calves	3,808.9	3,939.3	+ 3.4	+130.4	30,381	31,723	+ 4.4	+ 1,342
Bulls	202.0	210.2	+ 4.0	+ 8.2	2,305	2,365	+ 2.6	+ 60
Other heifers	-	-	-	-	6,046	6,331	+ 4.7	+ 285
Total	12,217.0	12,633.0	+ 3.4	+416.0	114,470	117,916	+ 3.0	+ 3,446

^a In the U.S. for replacement purposes only.

In the U.S., the total cattle and calf inventory increased three percent during 1971, with beef cow numbers increasing moderately by 3.2 percent, steers and calves up 2.2 and 4.4 percent, respectively.

CATTLE INVENTORY, 1935 - 1971



Cattle on Feed

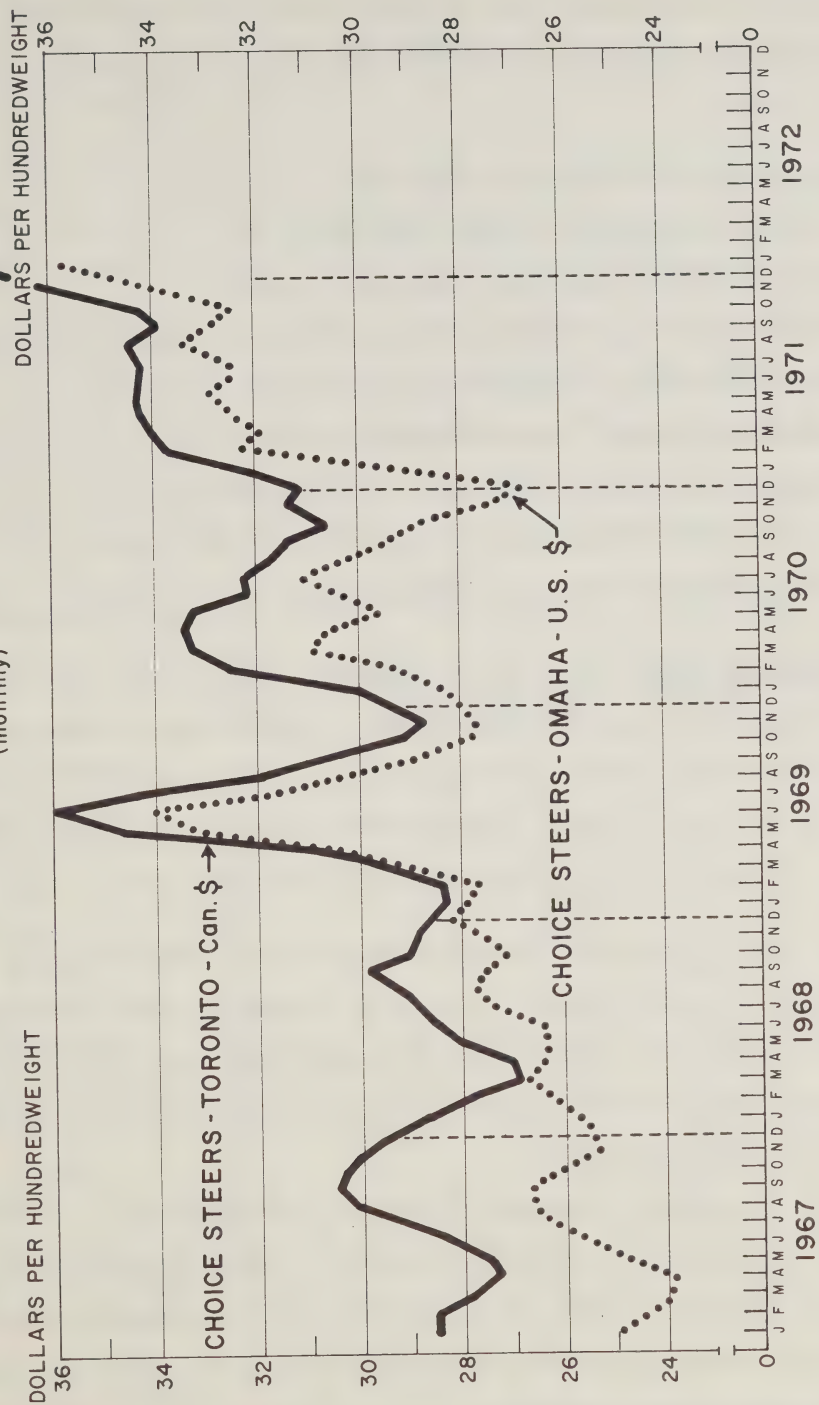
In the U.S., cattle on feed at January 1, 1972 in 23 major feeding states were estimated to be up nine percent from the same date one year ago. For 1972, U.S.D.A. looks for a four to six percent increase in fed cattle marketings. In Canada, cattle on feed in Ontario and the Prairie Provinces were estimated by Statistics Canada on December 1, 1971 to be up six percent from one year ago with all of the increase in the classification "Under 600 Pounds". In Canada, fed cattle marketings (Choice and Good) in 1972 can be expected to average four to five percent above 1971.

In both countries, increases in fed beef production for 1972 can be expected. In addition, lower feed costs coupled with the higher cost of replacement cattle may lead feedlot operators to market cattle at heavier weights.

In 1971, cow slaughter in Canada and the U.S. was up 8.5 and five percent, respectively, from the very low levels of 1970. However, cow slaughter was still on the low side in relation to the number of cows on farms. Culling rates likely will not be altered significantly this year because feeder cattle prices are favorable for further herd expansion.

While total cattle slaughter under federal inspection for the first six weeks of 1972, compared with the same period in 1971, was down three percent in the U.S. and up only one percent in Canada, slaughtering levels this spring can be expected to average somewhat above the 1971 spring levels in both countries. Summer and fall levels can also be expected to average above 1971. There are more feedlot replacements available this winter and

PRICE PER HUNDREDWEIGHT OF CHOICE STEERS AT TORONTO AND OMAHA



spring than one year ago. Also, fed cattle prices are relatively high and feed costs are favorable. These conditions likely will encourage more cattle feeding.

Fed cattle prices in Canada will depend on two key factors.

- (1) the "basic" price as established in the U.S;
- (2) the level of fed cattle marketing in Canada.

U.S. officials now feel that while there is reason for general optimism, it does not seem realistic to expect the market to maintain recent price levels of nearly \$36 at Omaha. Increased marketings and possibly heavier weights may force Choice steers at Omaha down a dollar or more by spring. In the last half of 1972, Choice steers at Omaha are expected to average close to the July-December 1971 average of \$33 per cwt.

In Canada, fed cattle prices for the balance of 1972 may very well change with changes in U.S. fed cattle prices. For the first six weeks this year Choice steers prices at Toronto averaged \$37.33 - only \$1.37 per cwt over Choice steers at Omaha. With increased fed cattle marketings expected in both countries this price relationship may not change greatly.

Usually when we see fairly sizeable increases in beef output ahead, we anticipate lower cattle prices. Many of us continue to under-estimate the demand for beef. The price effects of increased beef supplies in 1972 could very well be offset by increases in population, and consumer incomes, along with lower pork supplies.

However, the unusually high price of feeder cattle coupled with any fall in slaughter prices would widen feedlot operators' already negative price margins. From 1968 to 1971, the annual price of Choice Slaughter Steers at Calgary increased 21 percent; Good Feeder Steers, 28 percent; and Good Feeder Steer Calves, 40 percent.

HOGS
A.M. Boswell

Supply Situation

In both Canada and the U.S., hog slaughter in 1971 was at an all-time annual high - up 17 percent in Canada and 11 percent in the U.S. from 1970 (Table 1). For the first six weeks of 1972, a turn-around has occurred in the North American hog cycle with slaughter down four percent in Canada and sharply lower in the U.S. by 16 percent. In both countries, the cutback in hog slaughter to date this year is in response to a very unfavorable financial situation which developed from a combination of very low hog prices and relatively high feed prices during late 1970 and the first half of 1971.

TABLE 1 - ORIGIN OF HOG CARCASSES GRADED IN CANADA AND FEDERALLY INSPECTED HOG SLAUGHTER IN THE UNITED STATES

	Slaughter '000 head	1971		1972 (First Six Weeks)	
		Change Percent	from 1970 '000 head	Slaughter '000 head	% Change From Same Period 1971
Newfoundland	19.9	+ 53.1	+ 6.9	2.2	+ 1.3
P.E.I.	153.8	- 7.3	- 12.1	17.0	- 19.7
Nova Scotia	120.1	+ 11.9	+ 12.7	14.2	+ 1.8
New Brunswick	71.5	+ 9.4	+ 6.1	7.8	- 11.5
Quebec	1,927.5	+ 10.6	+ 184.9	219.1	+ 5.7
Ontario	3,141.1	+ 7.1	+ 207.9	357.4	- 1.0
Total East	5,433.9	+ 8.1	+ 406.4	617.7	+ 0.5
% Canada	53.7			54.3	
Manitoba	1,331.2	+ 24.7	+ 264.0	141.4	- 15.4
Saskatchewan	1,249.9	+ 44.0	+ 381.6	140.0	- 9.7
Alberta	2,015.4	+ 24.4	+ 395.3	230.4	- 2.2
British Columbia	83.1	+ 27.4	+ 17.9	8.2	- 7.0
Total West	4,679.6	+ 29.2	+1,058.8	520.0	- 8.2
% Canada	46.3			45.7	
CANADA	10,113.5	+ 16.9	+1,465.2	1,137.7	- 3.7
UNITED STATES	86,670.0	+ 10.8	+8,483.0	8,891.4	- 16.2

Most of the 1971 sharp increase in Canada's hog slaughter occurred in the West. During 1970, 42 percent of national hog slaughter originated in Western Canada and in 1971, the proportion increased to over 46 percent. While Canada's hog slaughter increased sharply in 1971, its percentage of total North American hog slaughter (U.S.-Canada combined) changed little - from 10 percent in 1970 to 10.4 percent in 1971 (Table 2). Due to the heavier weights of market hog in the U.S., Canada's proportion on a tonnage basis would be somewhat less than 10 percent.

In 1971, Canada-U.S. hog slaughter combined showed an increase of 11.5 percent or 9,948 thousand head (1,465 thousand in Canada, 8,483 thousand in the U.S.) compared with 1970. Had no slaughter increase occurred in Canada the combined supply of the two countries in 1971 would have been up by 9.8 percent. In 1971, the U.S. accounted for 85.3 percent of the combined U.S.-Canada increase, Western Canada for 10.6 percent and Eastern Canada 4.1 percent.

Pork Trade

Traditionally, Canada's hog production has exceeded domestic requirements resulting in a small quantity for export. However, in 1963 and again in 1969, pork import exceeded exports.

In 1971, total exports of dressed pork at 95.2 million pounds were at the highest level since 1948 (Table 2). Since the mid-1960's, exports of pork to countries other than the U.S. have increased from 3.6 million pounds in 1965 to 28.8 million in 1971, largely because of an increase in exports of frozen pork (mainly boneless backs) to Japan. In 1971, Japan was the largest off-shore outlets at 20.1 million pounds, followed by the U.K. at 3.6 million pounds, and Jamaica at 1.8 million pounds.

TABLE 2 - CANADA'S IMPORTS AND EXPORTS OF DRESSED PORK

	Imports			Exports			Canada's Trade Balance
	U.S.A.	Other Countries	Total	U.S.A.	Other Countries	Total	
(000 pounds)							
1965	27,505	9,101	36,606	53,309	3,628	56,937	+ 20,331
1966	27,296	9,197	36,493	44,264	3,053	47,317	+ 10,824
1967	26,836	1,004	27,840	53,169	4,751	57,920	+ 30,080
1968	36,428	8,646	45,074	54,237	4,883	59,120	+ 14,046
1969	66,901	8,772	75,673	48,453	6,453	54,906	- 20,767
1970	22,935	7,896	30,831	58,693	10,269	68,962	+ 38,131
1971	13,950	9,722	23,672	66,358	28,842	95,200	+ 71,528
1966-71	32,391	7,539	39,930	54,196	9,708	63,904	+ 23,974

In 1971, the largest source of off-shore pork imports into Canada was canned pork luncheon meat from Denmark - accounting for 6.8 million pounds of the 9.7 million imported.

Last year, exports of live pigs from Canada to the U.S., primarily for slaughter, totaled 67,649 head, compared with 61,272 head in 1970 and only 13,899 in 1969. Most of the increase in live exports is accounted for by the increase in "straight market hogs" primarily from Alberta to the Pacific North West. This outlet to the Pacific North West quickly and effectively establishes a "floor price" for Western hog producers, particularly in Alberta.

The United States, the world largest producer of pork, continue to import pork in ever larger quantities. From the 1960 level of 171 million pounds, imports of pork have increased consecutively to 357 million in 1971. The 1971 level of imports accounted for about 2.5 percent of U.S. pork producti

Hog Prices

Hog prices in Canada are tied directly to the "basic" North American hog price as determined in the U.S. Midwest. Pork products move both ways across the border. In both countries, the slaughter decline to date in 1972 directly reflects the similar base-point pricing and price movements, within what is commonly referred to as a "North American Pork Market."

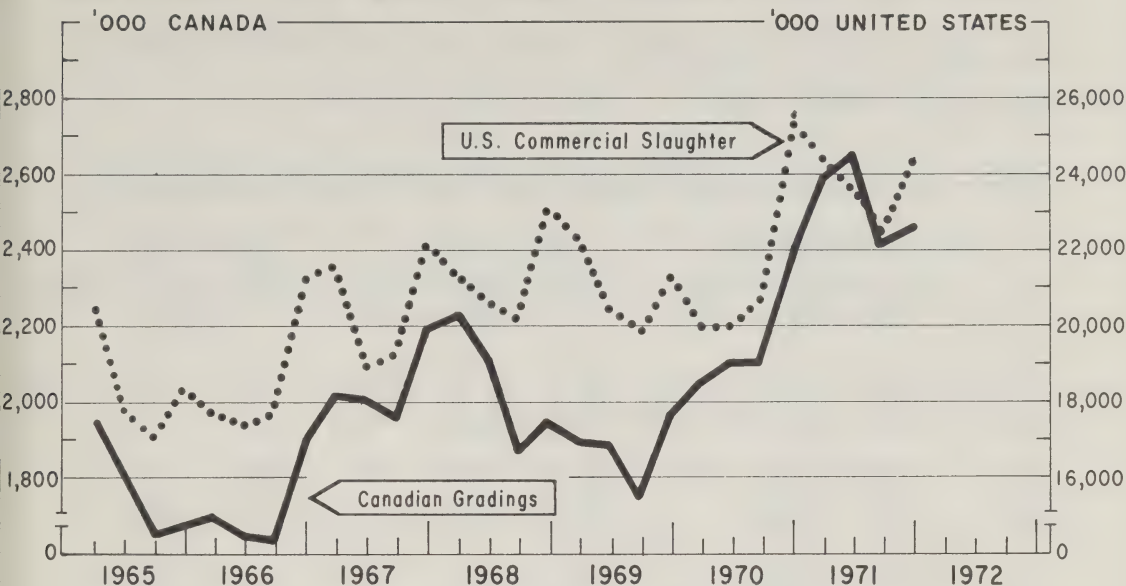
In 1971, in both Canada and the U.S., the hog price situation was characterized by very low prices. In Canada index 100 (dressed) at Toronto averaged \$25.80 in 1971, the lowest annual hog price since 1960. Since September 1971, hog prices in both countries have steadily improved and for February 1972, Toronto averaged \$34.39 per cwt dressed and the seven U.S. markets \$33.77 dressed (Table 3). The price rise was largely in response to the decrease in U.S. slaughter. The 1971 fourth quarter slaughter in the U.S. was down three percent from the same quarter in 1970 and in Canada up 3.3 percent. The sharp rise in hog prices to February this year directly reflects the fact that U.S. hogs slaughter for the first six weeks is down 16 percent from 1971 and in Canada down 3.7 percent.

Outlook

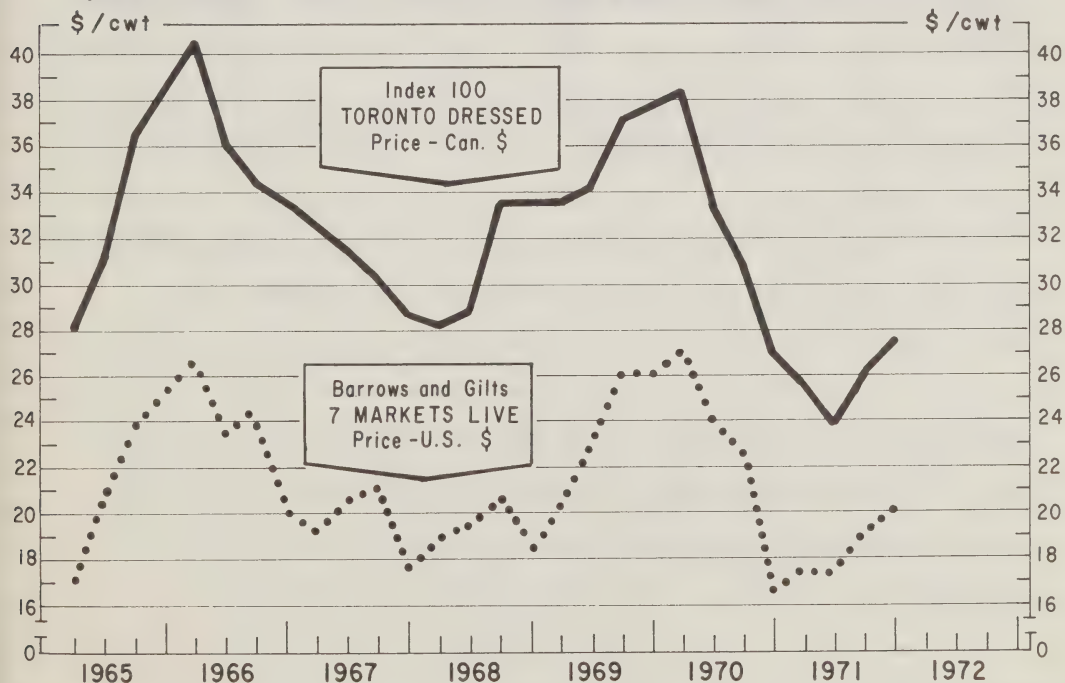
In both countries hog slaughter through 1972, will continue to be lower than in 1971, but reductions especially in the U.S. may become much smaller than they were in January and February.

In Canada, hog gradings for the first half of 1972 could average five to eight percent below 1971 level. Gradings in the second half of 1972 can also be expected to continue below the 1971 last half level - probably in

QUARTERLY HOG MARKETINGS - CANADA & UNITED STATES



QUARTERLY HOG PRICES - CANADA & UNITED STATES



the range of five to eight percent. The cutback in hog slaughter in the West will be somewhat offset by a smaller drop in the East.

TABLE 3 - TORONTO, MONTHLY AVERAGE DRESSED PRICE FOR INDEX 100: UNITED STATES, MONTHLY AVERAGE DRESSED PRICE FOR BARROWS AND GILTS AT SEVEN MIDWEST MARKETS^a

	Base Index 100 Toronto			Barrows-Gilts Seven U.S. Markets			Toronto Over Seven U.S. Markets		
	1970	1971	1972	1970	1971	1972	1970	1971	1972
	Cdn \$/cwt dressed			U.S. \$/cwt dressed			\$/cwt		
January	39.10	25.98	31.58	35.58	21.17	32.26	3.52	4.81	- 0.68
February	39.51	26.46	34.38	36.66	25.23	33.77 ^p	2.85	1.23	+ 0.61
March	36.42	24.44		33.69	22.25		2.73	2.19	
April	33.26	22.82		31.19	21.02		2.07	1.80	
May	33.55	23.94		30.56	22.64		2.99	1.30	
June	33.40	24.47		31.22	23.87		2.18	0.60	
July	32.69	25.56		32.64	25.77		0.05	-0.21	
August	30.15	26.68		28.73	24.77		1.42	1.91	
September	29.72	26.39		26.43	24.56		3.29	1.83	
October	27.57	26.97		23.26	25.71		4.31	1.26	
November	26.98	27.37		20.38	25.18		6.60	2.19	
December	26.42	28.40		20.35	27.25		6.07	1.15	
Year	32.20	25.80		28.51	23.96		3.69	1.84	

a Conversion rate of 77 percent for U.S. live price to dressed price.

p Preliminary.

In the U.S., hog slaughter in the first half of 1972 will be down substantially from 1971 levels. The 1971 U.S. fall farrowings (June-November) and farrowing intentions for December 1971-May 1972, are estimated by the U.S.D.A. to be down nine and 10 percent respectively from one year earlier. Pigs from these farrowings will make up most of the market supply of hogs during 1972. Despite the favorable hog-corn price ratio expected for 1972 in the U.S., the June-November pig crop is estimated to be smaller than the 1971 fall pig crop.

In both Canada and the U.S., federally inspected hog slaughter in 1971 was at an all-time annual high (10.1 million head in Canada, 86.7 in the U.S.). The predicted cutback in hog slaughter in 1972 will still leave adequate supplies of pork for North American consumers. Slaughter in 1972 will be at a relatively high level in both countries compared with the annual average of the 1960's - 7.1 million head in Canada, 77 million in the U.S.

On the demand side, pork consumption in Canada during the 1960's range between 47 and 54 pounds per person, it increased to 55.3 pounds in 1970, and should average close to 60 pounds for 1971. Likewise in the U.S., the consumption of pork during the 1960's ranged between 58 and 66 pounds per person, increased to 66.4 pounds in 1970, and to almost 73 pounds in 1971.

A favorably priced market should prevail throughout 1972. In the U.S., prices are expected to fall off in late winter and early spring - probably by \$1 or more, from current levels of about \$26.00 (live). Prices are expected to rise seasonally in late spring and average well above last summer (June-September) average of \$19.00 live. A summer peak above the \$25.40 summer high of two years ago can be expected. Hog prices in the U.S. should decline seasonally next fall, though still averaging well above the \$20 level of October-December 1971.

Provided U.S. price predictions come about, price levels at Toronto can be expected to average above the \$30.00 per cwt level for the balance of the year. With the Canadian hog industry being on an export basis, Canadian prices can be expected to change in line with U.S. hog prices throughout 1972.

Looking further ahead into 1973, the U.S. hog-corn price ratio¹ in January this year averaged 20.8 to 1. The 1971 U.S. slaughtering record was in response to a ratio of about 23.3 to 1. Even though a favorable hog-corn price ratio is expected during 1972, the U.S.D.A. Outlook Conference in late February indicated that the June-November 1972 pig crop likely will be smaller.

¹ Number of bushels of corn that are equal in value to 100 lb of live hog.

DAIRY

Veronica McCormick

Situation

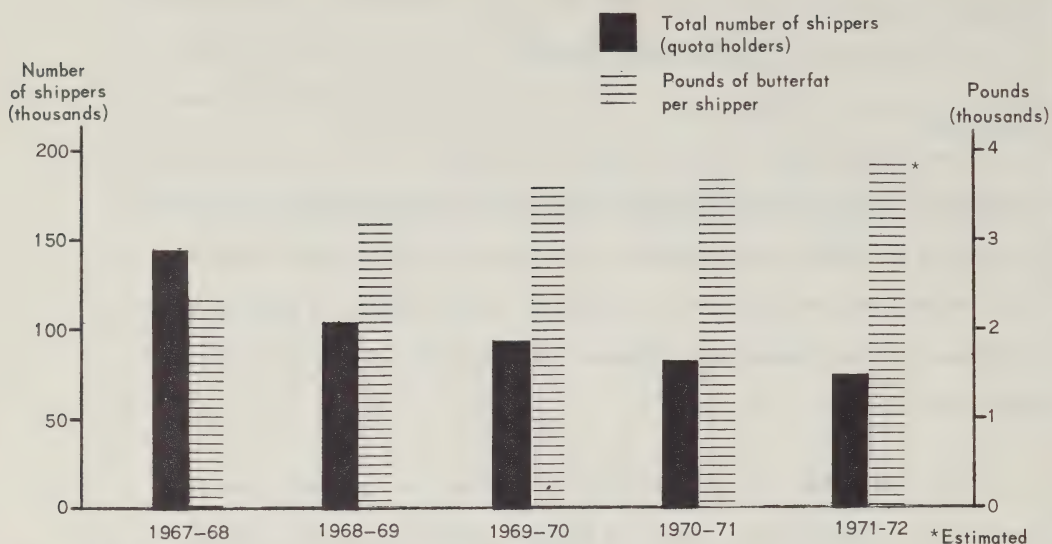
Following a decline of 3.7 percent in the first ten months of 1971, milk production in Canada rose moderately in November and December bringing total output for the year to 17.7 billion pounds, down 2.7 percent from 1970 levels. The production increases in late 1971 occurred largely in Quebec and Ontario.

Fluid milk and cream sales in 1971 rose by about two percent from 1970 levels on a volume basis. Sales of partly skimmed milk (two percent butterfat) increased about 11 percent from the previous year. Fluid cream sales, in terms of milk, also increased in 1971, reversing a long-term downward trend.

Creamery butter production in Canada in 1971 amounted to 287 million pounds, a decline of 41 million pounds, or 12 percent, from 1970. Preliminary estimates of creamery butter consumption are 328 million pounds — about the same as a year ago.

Output of cheddar cheese was 191 million pounds in 1971, a 25 million pound increase, or 15 percent from a year earlier. Output of "other" cheese made from whole milk amounted to 57 million pounds, a 16 percent increase. Domestic consumption of cheddar cheese was about two percent above a year earlier. Consumption of "other" cheese rose substantially. Exports of cheddar in 1971 totaled 29 million pounds — about the same as in 1970. Imports of specialty-type cheeses at 35 million pounds, increased about four million pounds from 1970.

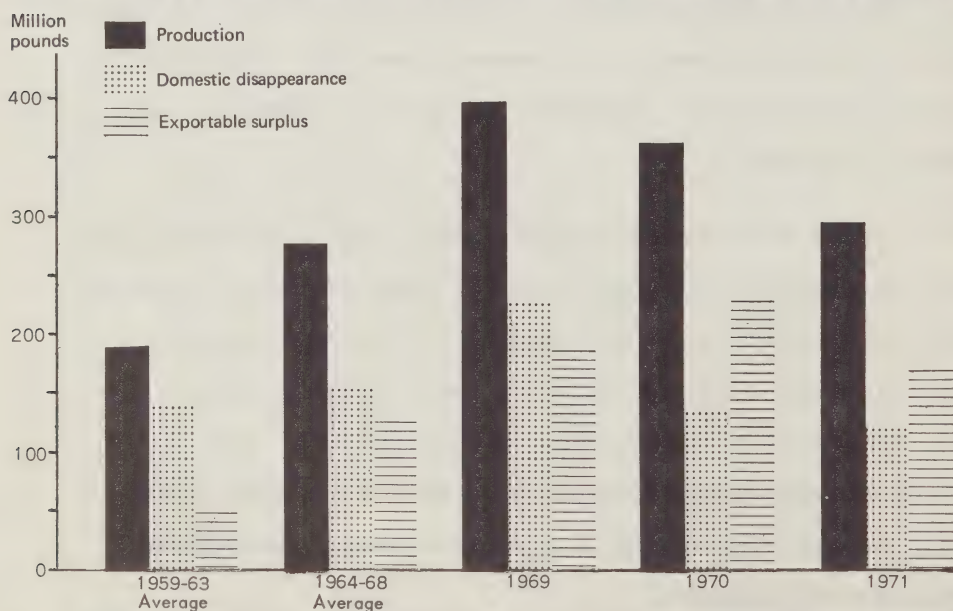
REGISTERED MANUFACTURING MILK AND CREAM SHIPPERS, CANADA



* Estimated

ECONOMICS BRANCH
CANADA AGRICULTURE

PRODUCTION, DOMESTIC DISAPPEARANCE AND EXPORTABLE SURPLUS OF SKIM MILK POWDER



ECONOMICS BRANCH
CANADA AGRICULTURE

Production of evaporated whole milk rose to 265 million pounds, a three percent increase. Consumption, at 255 million pounds, declined slightly. Production and consumption of ice cream mix amounted to 30 million gallons, up slightly from 1970 levels. Skim milk powder output totaled 301 million pounds, a 61 million pound, or 17 percent decline. As well skim milk powder exports declined to 240 million pounds, a 57 million pound decrease from 1970 levels.

Policy

The Federal Government continued to support the dairy industry in 1971-72 by direct subsidy payments for industrial milk and cream, and market support for butter, cheese and skim milk powder. "Offer-to-purchase" prices for certain dairy products are well above a year earlier.

Current "offer-to-purchase" prices, are as follows (1970-71 prices in brackets): butter, 68 cents per pound, (65 cents); cheddar cheese, 54 cents, (47 cents for the main production season); spray process skim powder, 26 cents, (20 cents). The rate of Federal subsidy in 1971-72 for industrial (quota) milk and cream is \$1.25 per 100 pounds of milk testing 3.5 percent butterfat (or 35.71 cents per pound of butterfat), exclusive of holdbacks for export assistance. The holdback on quota deliveries in the 1971-72 dairy support year will average 10 cents per 100 pounds of industrial milk, or 2.85 cents per pound of butterfat. This is a reduction of 16 cents from year-earlier levels.

In January, 1971, a comprehensive milk marketing plan was agreed to by the Canadian Dairy Commission and the Milk Marketing agencies of Ontario and Quebec, bringing into effect a market-sharing system for industrial milk and that portion

of milk produced by fluid producers, which is used for manufacturing purposes. The agreement also applied to cream producers in Quebec. The arrangement took effect with respect to deliveries starting December 1, 1970. Ontario cream producers entered the plan on April 1, 1971. Milk and cream producers in Prince Edward Island entered into the national supply management program on December 1, 1971. The agreement at this stage covers over 80 percent of the industrial milk and cream production in Canada.

Outlook

Milk production in Canada in 1972 is expected to recover much, if not all, of the 2.7 percent decline registered in 1971. Output in 1972 is likely to approach the 1970 level of 18.3 billion pounds.

Higher returns for dairy products as the result of support price increases and quota adjustments in 1971 are expected to have an impact on milk production, particularly in Quebec and, to a lesser extent, in Ontario. Increases, if any, will likely be small in the Atlantic and Prairie Provinces. An expanding demand for fluid milk and cream for consumption will likely increase production moderately above year-earlier levels in British Columbia.

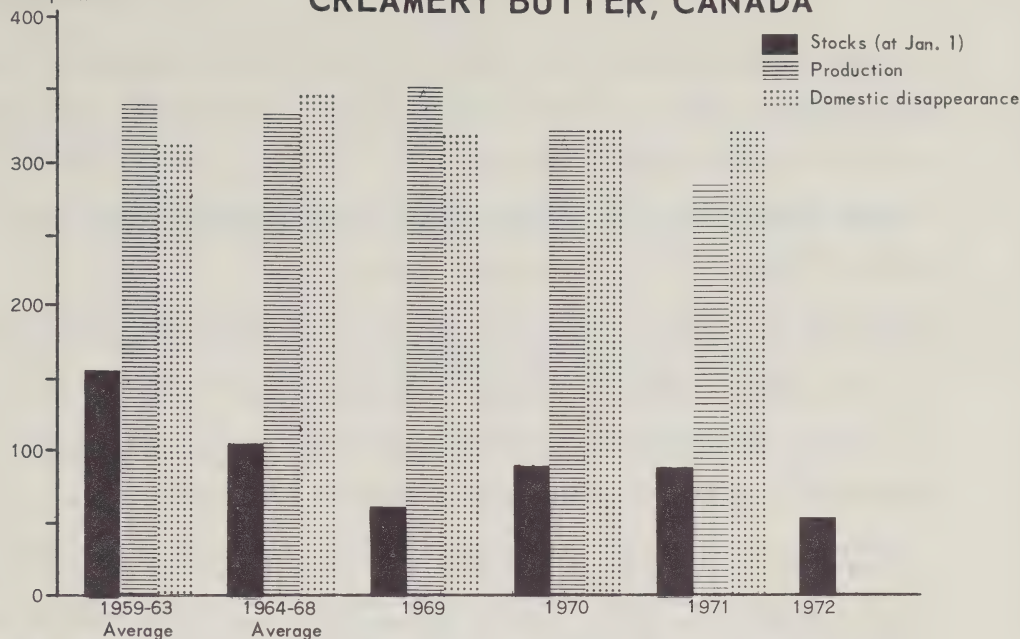
Milk and cream, in terms of milk, sold off farms in 1972 is forecast to reach 16.8 billion pounds, about 600 million pounds above marketings in 1971.

Volume sales of milk and cream for fluid consumption are expected to continue to increase, likely about 1.5 to 2.0 percent from 1971 levels.

Cheddar cheese production and consumption may level off in 1972. Much will depend on the demand for Canadian cheddar on the domestic market and the price

STOCKS, PRODUCTION AND DOMESTIC DISAPPEARANCE, CREAMERY BUTTER, CANADA

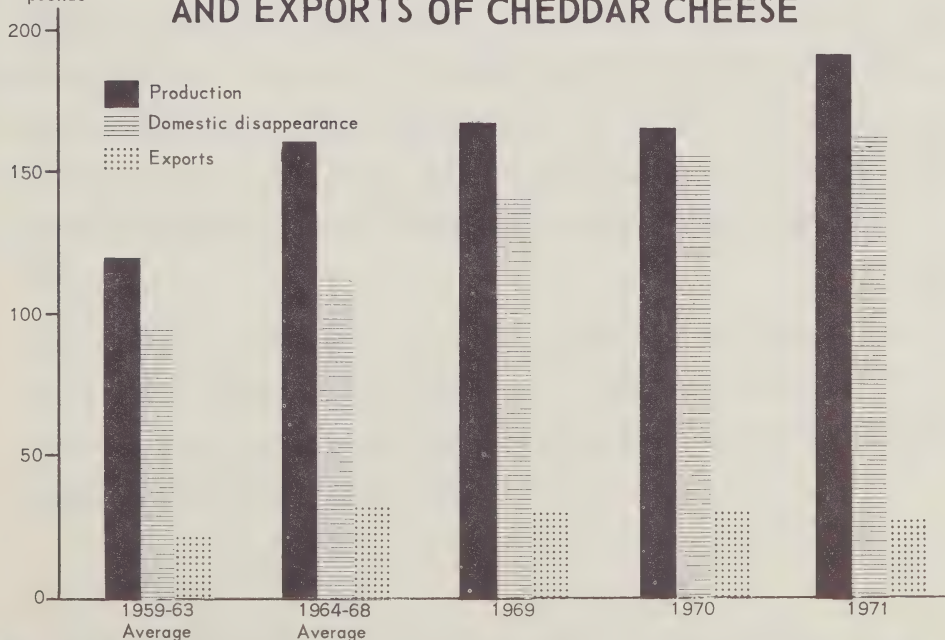
Million pounds



ECONOMICS BRANCH
CANADA AGRICULTURE

PRODUCTION, DOMESTIC DISAPPEARANCE AND EXPORTS OF CHEDDAR CHEESE

Million pounds



ECONOMICS BRANCH
CANADA AGRICULTURE

of cheese milk in relation to the price of milk for butter and powder. Production and consumption of other types of cheese — all varieties made from whole milk except cheddar — are expected to continue to increase in 1972. Cottage cheese output will likely continue to move moderately above year-earlier levels.

Production of concentrated whole milk products will likely be down in 1972 from 1971 levels, reflecting a slight decline in domestic usage and a drop in exports. The decline in production of concentrated whole milk products is expected to be offset by an increase in output of ice cream mix.

A moderately larger volume of milk should be available for the manufacture of creamery butter than in 1971. Butter consumption appears to be trending downward again. If the trend in domestic disappearance continues at the rate of the last quarter of 1971, the consumption figure for creamery butter in 1972 will be less than the 328 million pounds consumed last year.

The expected increase in butter output is expected to result in a larger output of skim milk powder. The quantity of skim powder available for export is expected to be between 160 and 175 million pounds. Skim powder prices on world markets are expected to remain firm at least during the first half of 1972. Cheddar cheese exports are expected to show little change from a year ago.

POTATOES

J.R. Burns

Situation

At the beginning of the 1971 marketing season, the North American supply of fall potatoes was only slightly smaller than the 1970 supply. Production in both Canada and the United States is currently estimated at one percent below record heights and final estimates are still to come.

The significant factor in the supply of Canadian potatoes east of the Lakehead, is the level of storage holdings in the Maritimes. Information available by February 1, 1972, indicates that holdings are barely lower now than last year at the same time. Western Canadian storage stocks appear lower than last year and most of the reduction in Western Canada is to be credited to Alberta. Total consumption, in terms of storage disappearance, is five percent smaller than in 1970-71.

Imports between July 1971 and January 1972 were smaller than in the previous year and since January 1, 1972 they appear considerably lower than 1970 and 1971 levels. To date, total exports of the 1971 crop are slightly smaller than of the 1970 crop, which was one of the lowest on record. One bright spot though is the movement to Puerto Rico which is exceptionally good.

Heavy stocks of fresh potatoes and potato products in both Canada and the United States continue to influence grower prices. The Canada-U.S. relationship for production and price is shown on the chart "Fall Potato Production and Average Farm Prices".

Fresh potato prices in Canada are currently lower than last year. Prices to the grower, per cwt in bulk, delivered at shipping point for white, Canada No. 1's in the east were:

	<u>December 1, 1971</u>	<u>February 25, 1972</u>
P.E.I.	\$1.45-\$1.60 mostly \$1.55	\$1.25-\$1.40 mostly \$1.40
N.S.	\$1.93-\$2.13	\$1.90-\$2.00
N.B.	\$1.00-\$1.15	mostly \$1.12 and \$1.30
Quebec	\$1.12-\$1.32 mostly \$1.25	\$1.32-\$1.62 mostly \$1.47
Ontario	\$.90-\$1.73 mostly \$1.40	\$1.37-\$1.73 mostly \$1.58

F.o.b. shipping point prices, per cwt, Canada No. 1's in the west were:

	<u>December 1, 1971</u>	<u>February 25, 1972</u>
Manitoba		
Reds, washed	\$2.60	\$2.47
Alberta		
Gems, washed	\$3.25-\$3.50	\$3.50
B.C. (Coast)		
Gems	\$3.10	\$3.10
B.C. (Coast)		
Whites	\$2.50	

By mid-December Maritime prices had weakened, Ontario prices had strengthened and western prices had changed very little. During the first part of January, Maritime prices fluctuated, Quebec and Ontario prices strengthened and those in Western Canada remained unchanged. By mid-January Manitoba prices had weakened. A month later, there was some increase in New Brunswick, Quebec and Ontario prices. In the United States price movements were somewhat similar. Maine prices for Round Whites advanced but began and continued below last year's. It was the same for Long Island Round Whites but upstate New York Katahdins began higher than the year before although by January were only slightly above a year ago. Under pressure of heavy supplies, Red River Valley farm prices were about a fourth less than a year earlier. Idaho Russets began higher, continued to increase and were higher than the previous year at mid-January.

Outlook

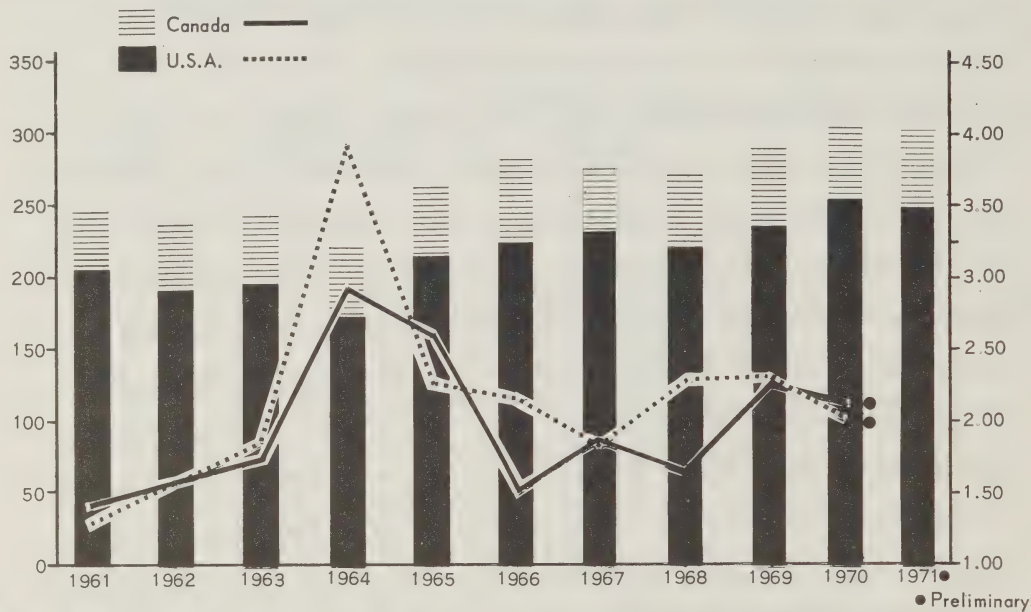
Unless there is an especially large cull out or an unexpectedly large export movement there will be plentiful supplies of potatoes on hand till the end of the season. Similarly there will be large processor inventories. Nevertheless there are some encouraging aspects. About 1,800 carlots of New Brunswick and Prince Edward Island potatoes have been offered to the Agricultural Stabilization Board and this is a sizeable six or seven percent of the February 1 storage holdings in the Maritimes. Manitoba growers are also expected to take advantage of the program. This should be an important factor influencing prices. With similar programs in the United States, end of season prices in both countries are bound to rise. Moreover, some four million pounds of dehydrated potatoes, equivalent to 280,000 cwt of fresh potatoes, will be bought by the Agricultural Products Board as a supplementary contribution to the World Food Program. There are other supply factors which will tend to increase the general price level. The United States winter crop is forecast at 2.5 million cwt or 18 percent less than in 1971. Early spring acreage is expected to be down 10 percent, late spring is down 12 percent and early summer acreage is down seven percent. The total expected acreage decrease for these four crops in the United States is expected to be about seven percent. Each of these reductions will exert upward pressure on prices.

Under the circumstances of increasing yields due to technological factors and a rather static consumption, less rather than more acreage is recommended for Canadian growers this coming season.

FALL POTATO PRODUCTION AND AVERAGE FARM PRICE

Million cwt

Canada \$ per cwt



ECONOMICS BRANCH
CANADA AGRICULTURE

In the longer term, the outlook for fresh potato consumption will be favorably influenced by the higher quality potatoes, by increased emphasis on the use of certain varieties for specific purposes and by better distribution and merchandising practices. Increased consumption of processed potato products is expected but in the snack food sector more competition will come from cereal products. The use of dehydrated potatoes to make chips and frozen french fries is already established and this will alter the demand for the raw potatoes used in these products. There appears to be ample capacity in Canada to produce flakes, granules, dehydrated and frozen potato products yet in the last half dozen years there has been a substantial import of these products from the United States.

The export of table, seed and potato products is changing. The seed potato certification program will give an extra competitive edge to Canadian seed sales. Japan, which in 1960 produced 90 percent of its farm products, now is able to produce only 77 percent and could become an important customer for some horticultural products. Changing demand patterns will open the way for such products as frozen french fries and potato granules in that market. This could offset the loss of some of our markets in the United Kingdom and Australia and make use of more of the present plant capacity.

APPLES
J.R. Burns

Situation

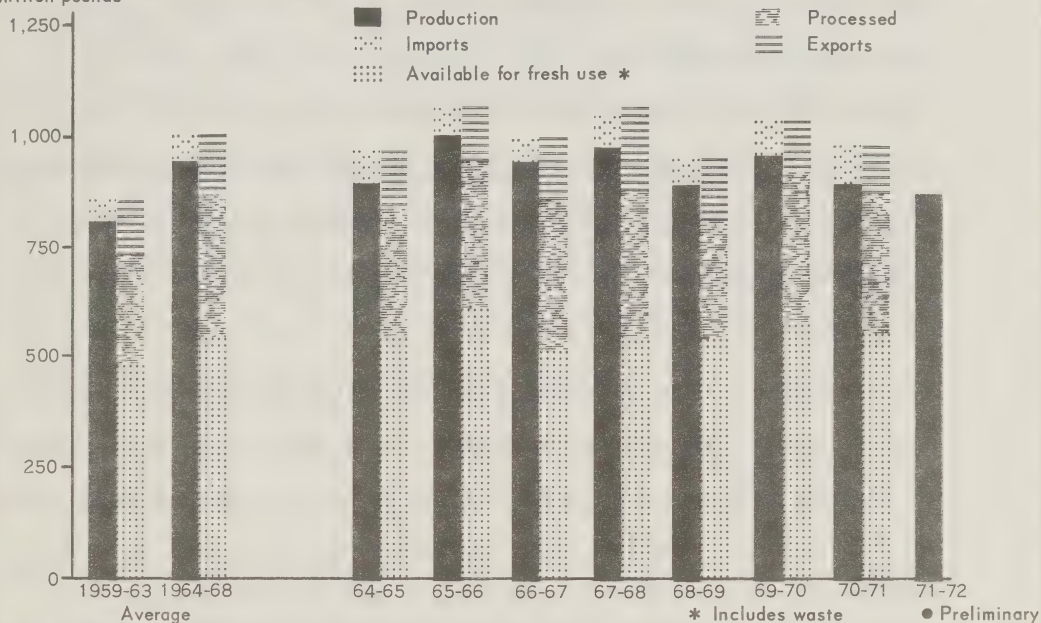
At the beginning of the 1971 marketing season for storage apples, North American supplies were about three percent more than the year before. A very small crop in British Columbia, larger than average crops in Quebec and Ontario, a much reduced crop in Washington, and large crops in eastern states were the significant factors. Canadian stocks of apple sauce, juice and canned apples were significantly lower than the year before. Stocks of sauce and canned apples in the United States were also lower.

Imports of fresh apples between July 1 and January 1, were down 18 percent compared to the previous year, and since January 1 imports are estimated at 13 percent less. Exports to the United States, the United Kingdom and other countries were down 12.5 percent, with the largest proportional reduction being to the United Kingdom. Exports from Nova Scotia, Quebec and Ontario were in excess of last year's but very large reductions in exports from British Columbia brought the Canadian total to a much lower level than has been the case for some time. Comparative supply and disposition for a number of years is shown in the Chart "Fresh Apples — Canada".

Mid-February storage holdings of raw apples across Canada were seven percent lower than those of the previous year. Although British Columbia supplies were much lower, Eastern Canadian supplies were 11 percent higher. Movement out of storage since December 1 was two percent less than last year in total but in Eastern Canadian movement was 14 percent more.

FRESH APPLES, CANADA, 1959-63 TO 1971-72

Million pounds



ECONOMICS DIVISION
CANADA AGRICULTURE

At the beginning of the 1972 calendar year stocks of apple products were significantly smaller than a year earlier except for frozen apples and pie filling. The stocks of sauce, for instance, were 11 percent lower and solid pack and juice were 36 and 16 percent lower than in 1971. The demand for apples by processors has been less to date. Three of the four major packs of processed apples (solid pack, sauce and juice) have been smaller to date. Only the relatively minor pack of frozen apples has been higher.

With Eastern Canadian storage stocks of raw apples up significantly over last year and United States stocks 15 percent higher than the five year average, current prices in Ontario and Quebec are lower than in the past three years. Wholesale-to-retail prices in Montreal for Quebec McIntosh 8/5 pound cello packs are \$2.80 to \$3.00, compared to \$3.00 to \$3.25 a year ago. For Ontario Macs in Toronto the current price per bushel is \$2.75 to \$3.00, compared to \$3.50 to \$3.75.

Smaller holdings in Western Canada and the United States have resulted in higher prices in the west compared to a year earlier. B.C. red Delicious at Winnipeg were quoted at \$6.35 to \$6.85 per carton compared to \$5.95 to \$6.20 a year ago. Similarly B.C. Spartans at Vancouver were \$6.50 to \$7.00 compared to \$5.25 to \$5.75. In Halifax at mid-February McIntosh, 8/5 pounds, cello packs, Fancy grade, were selling at \$4.50, the same price as a year ago.

Outlook

For the balance of the current marketing year the outlook for British Columbia apple growers is comparatively bright. The smaller quantities have undoubtedly

helped bring higher prices . This will continue for the next few months. Ontario (and United States) producers are also looking to these markets. Quebec supplies may move westward but more likely into the Atlantic provinces. However, aside from a small promotion for fresh apples, there is little reason to believe there will be a larger than usual consumption sufficient to affect prices for Canadian apples.

There is not likely to be as large quantities of new crop apples from southern hemisphere countries entering Canada this year. Yet, affluent Canadians have a marked preference for non-storage apples and there will be some competition, especially from South African Granny Smith apples.

There are no additional significant quantities of fresh apples expected to be exported during the balance of the marketing season. Since the largest part of the exports have already taken place and because British Columbia, the largest exporting province, is in short supply, this year may end with one of the smallest export movements on record.

Although the usual quantity will likely be marketed, fresh apple prices are expected to increase slightly as to the marketing season advances.

The movement of apples to processing is an important part of the demand and has been increasing in recent years. January 1, 1972 reports however, indicate generally smaller packs and lower stocks. Therefore, for the remainder of the year there should be an increase in the rate of pack, even if only to bring it to usual levels. But the condition of current stocks and consumption rates do not indicate this will happen for most products. It is likely only that there will be an increase in the juice pack.

Canned juice, which usually brings low returns to producers, was 12 percent under last year's production by January 1, 1972. Juice apple prices are now increasing and are better than last year. With comparatively smaller stocks on hand, increasing quantities of apples will go to the processors for juicing. The demand for Quebec cider during the past year has far exceeded the supply. Although plant capacity is still somewhat limited in terms of current demand, significant additional quantities of apples may well go into this product.

There will be a decrease, however, in British Columbia and Nova Scotia apple processing. As a result, the total amount going to the processors will be smaller than for the 1970 crop but the pack for the 1971 crop in Ontario and Quebec could be larger.

Returns on a per pound basis to producers in British Columbia will be higher than for the year before but probably lower in Ontario, Quebec and Nova Scotia. Total returns, however, may be higher in Quebec, and possibly Ontario, compared with the previous year but will likely be lower in other provinces.

World production of apples is increasing (Table 1). Since output in Canada and the United States is expected to increase faster than population growth, the orchards of tomorrow should be designed to suit this factor with specific objectives and goals.

TABLE 1 - APPLE PRODUCTION IN SPECIFIED COUNTRIES^a

Continent and Country	Crop Year					
	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72 ^b
	million bushels					
<u>North America</u>						
Canada	22.5	26.2	21.5	23.3	22.4	20.8
Mexico	6.6	6.7	6.7	7.2	8.5	9.0
United States	137.1	129.2	130.1	163.4	151.5	152.4
Total	166.2	162.1	158.3	193.9	182.4	182.2
<u>Europe</u>						
Austria	11.9	12.9	10.0	10.3	9.9	8.3
Belgium-Luxembourg	11.3	15.7	9.8	16.4	13.2	14.8
Denmark	4.0	4.5	4.4	4.6	4.4	4.2
France	63.9	81.4	96.7	87.8	88.3	90.4
Germany, West	77.3	119.3	82.4	135.0	93.3	92.1
Greece	8.7	9.4	10.1	10.2	10.9	11.8
Italy	120.1	101.4	101.4	105.5	108.2	92.9
Netherlands	18.1	25.6	17.8	24.9	23.6	25.2
Norway	2.1	2.6	3.4	2.8	2.5	2.6
Spain	20.6	15.8	22.5	20.8	20.3	22.3
Sweden	2.5	2.2	2.3	1.7	2.3	1.9
Switzerland	4.7	5.5	4.8	6.6	4.7	6.6
United Kingdom	18.1	15.9	18.5	21.9	26.7	24.3
Yugoslavia	11.2	15.8	16.0	25.4	14.5	17.4
Total	374.5	428.0	400.1	473.9	422.8	414.8
<u>Asia</u>						
Japan	55.6	59.1	59.6	57.0	54.3	
Lebanon	5.8	9.8	8.9	4.2	6.2	7.9
Turkey	23.1	33.6	36.7	32.5	34.1	
<u>South America</u>						
Argentina	27.1	24.6	22.9	23.4	22.3	22.8
Chile	5.3	5.4	5.2	4.3	4.9	5.1
<u>Africa</u>						
South Africa	9.6	11.4	10.9	11.0	12.0	12.3
<u>Oceania</u>						
Australia	19.4	19.6	22.2	22.3	23.5	22.0
New Zealand	5.3	5.9	5.6	7.0	6.1	6.9
Total Specified Countries	691.9	759.5	730.4	829.5	768.6	

a Dessert and cooking varieties except in those instances where cider apples are not reported separately.

b Preliminary.

Source: Based on United States Department of Agriculture, Foreign Agriculture Bulletin Deciduous Fruit, October 1971.

POULTRY AND EGGS

J.G. Lussier

Poultry

Commercial marketings of all poultry meat at registered plants in Canada in 1971 totaled 844 million pounds, eviscerated weight equivalent, a decrease of two percent from 1970. The apparent domestic disappearance increased 1.2 percent, to 854 million pounds during the same period.

Poultry marketings from January to April, 1972 are forecast to total 237 million pounds, compared to 247 million pounds in the same months of 1971 — a decrease of four percent. Most of the decrease is expected to be broiler turkeys (6.3 million pounds) and heavy toms (two million pounds).

Poultry meat prices are higher than a year ago but should remain competitive in comparison to red meat prices. Demand continues fairly constant and an increase in the domestic disappearance is expected for January to April, in relation to the population increase.

Broiler Chickens

Commercial marketings of broiler chicken in Canada in 1971 totaled 532.4 million pounds — a decrease of 4.1 percent from 1970. Domestic disappearance decreased by 10.2 million pounds to 535.2, a loss of 1.9 percent. Nevertheless all marketings were absorbed plus nearly three million pounds of stocks. Prices to producers were higher than in 1970.

The January to April 1972 commercial marketings are forecast to total 176.2 million pounds compared to 171.3 million pounds in 1971, a gain of about three percent. During the November 1971 to January 1972 period, the domestic disappearance increased two percent over the same period a year earlier while wholesale-to-retail prices were more than 10 percent higher than a year earlier. If the current firm and profitable prices are to be maintained, production will have to be held in check to closely parallel disappearance. Further price increases will be tempered by the availability of the U.S. product. Current broiler prices are also due in large part to the much higher prices for red meats and increasingly controlled marketings.

Turkeys

Marketings of turkeys of all weights at registered plants in Canada in 1971 totaled 207 million pounds — an increase of one percent from 1970. In addition to domestic slaughterings, 233 thousand head, mostly broilers, were exported live to the United States. Apparent domestic disappearance from commercial supplies of all turkey meat in 1971 totaled 207 million pounds, 4.7 percent more than in 1970. Prices paid to producers for all turkeys: broilers, heavy hens and heavy toms were sharply below year-earlier levels at most major markets. Broiler turkeys marketings at registered stations in Canada in the January - May period of 1972 are forecast to decrease about 22 percent from the similar period in 1971. Producer and wholesale-to-retail prices for the last three months have been up nearly 10 percent over a year ago, but stocks grew 1.6 million pounds during January. However, the expected decrease in marketings from a year ago will become more pronounced in February, March and April, and should keep prices firm as summer approaches.

During the January - May period of 1972, 315 thousand hens are expected to be marketed, a decrease of 13 percent. Indications are that 480 thousand toms will be marketed during the January - June 1972 period, a decline of 225 thousand or 33 percent from 1971.

Domestic disappearance of heavy turkeys in the first half of 1972 is not likely to change much from the 28 million pounds in 1970 and 29 million pounds in 1971. Prices to producers are expected to remain firm.

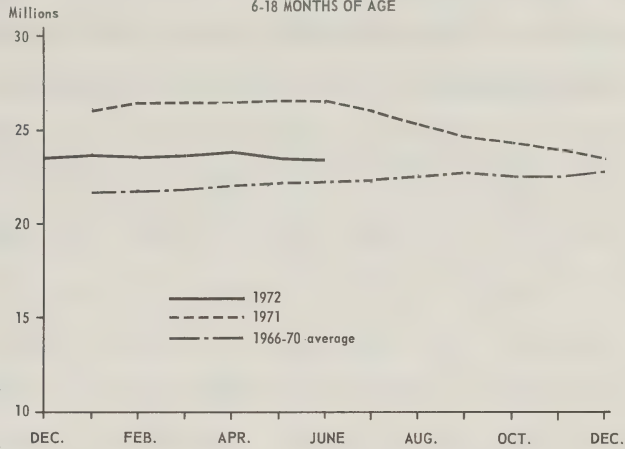
The United States is expecting a moderate expansion in chicken broiler production this year following a year of little change. The increase may be about five percent, in line with the trend of the past decade. The turkey growers of 20 states representing 95 percent of the turkey crop, report intentions of growing 116.6 million turkeys, one percent more than 1971.

Eggs

In 1971, the ratio of eggs marketed through registered stations to total eggs produced has been 64.7 percent, some two percent higher than 1970. Moreover this ratio generally goes down from October to December, but this year it has gone up to over 66 percent. Accordingly the ratio for estimates of egg marketings has been set at 65 percent until June. Egg marketings at registered stations in 1971 totaled 10.7 million cases, an increase of 4.8 percent over 1970. Most of the increase occurred from January to August. The actual increase in total production, according to Statistics Canada, was 125 thousand cases or 0.7 percent. This again points to the higher ratio of eggs going through registered stations.

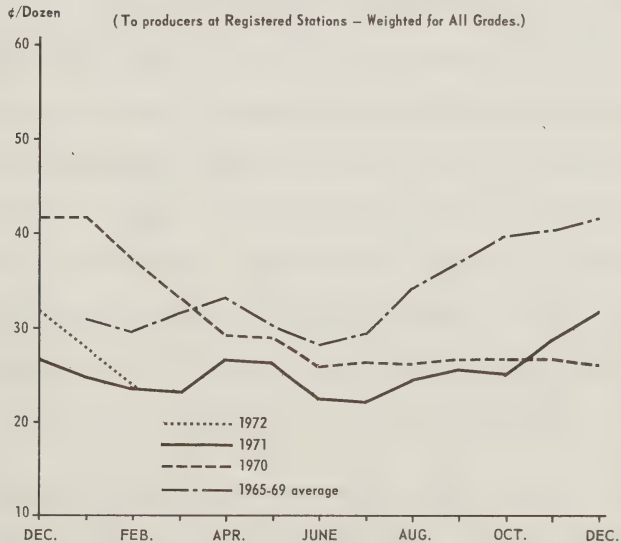
PULLET LAYER NUMBERS IN CANADA

6-18 MONTHS OF AGE



EGG PRICES IN CANADA

(To producers at Registered Stations - Weighted for All Grades.)



Marketings through registered stations from January to June 1972 are expected to show a decrease compared to the same six months of 1971. Even though more fowl are being slaughtered than one year ago, there is a concerted effort being made by provincial marketing boards to ensure greater returns to producers by increasing the rate of slaughter. The December 1, 1971 poultry survey by Statistics Canada shows 28.0 million hens and pullets over five months of age on farms, this compares with 29.9 million on December 1, 1970 — a reduction of six percent. The ratio of large eggs to small eggs now being marketed suggests that the proportion of old hens on farms is much higher than in previous years. Egg prices to producers for all grades, averaged 25.4 cents per dozen in 1971, 4.2 cents less than in 1970. For most of December 1971, prices were above 32 cents per dozen.

Demand for eggs is generally down after the holiday season, but this year prices dropped from 32.5 cents at the end of December to 22.6 cents per dozen for the week of February 19 — this is lower than a year ago when both production and marketings were higher. Another depressing factor is that storage stocks of frozen eggs are almost double what they were a year ago and processors are little inclined to buy eggs at any price. The ultimate decrease in total volume of eggs marketed in the first half of 1972 and the rate of increase in producer returns hinges on the number of old layers eliminated and the speed in which this takes place and the continuation of the reduced number of laying birds.

In the United States, expectations are that egg prices will average above year earlier levels next summer and fall. Egg output in 1971 totaled 200

million cases, close to the record, because of more layers in the flock early in the year and a higher rate of lay throughout the year. In the first half of 1972 a slightly smaller flock may offset the higher rate of lay expected. Production for 1972 may continue near 1971 levels.

Import and export movement of eggs has been minimal in early 1972, no change is expected in this movement in the foreseeable future.

SPECIAL CROPS

R.T. Miller

Sugar Beets

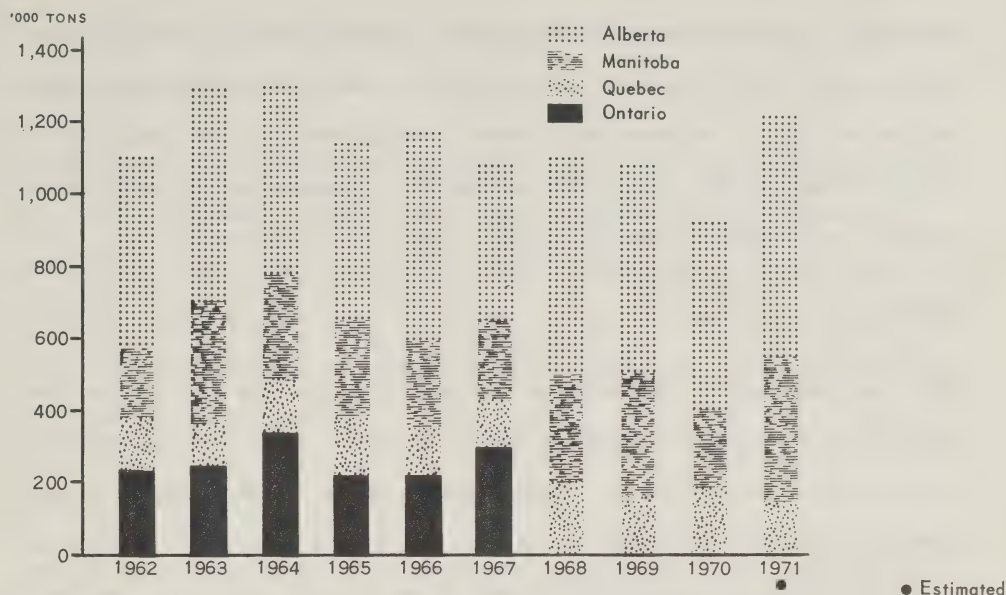
Beet sugar production in Canada in 1971 was 287 million pounds, 60 million pounds more than in 1970, close to 1969 levels. Stocks of beet sugar held by Canadian refiners on December 31, 1971 stood at 250 million pounds, nearly 35 million pounds more than a year ago. Total sales of beet sugar in 1971 were 253 million pounds, almost five million pounds more than in 1970.

Since the beginning of the current crop year several factors have combined to produce a sharp increase in the world price for sugar. The average London Daily Price for raw sugar during September was 4.6 cents a pound. By January the L.D.P. monthly average price was 8.9 cents a pound. As a result of the record crop in Western Canada last year, some reduction in sugar beet acreage is expected for 1972. Quebec sugar beet production is expected to remain unchanged.

Dry Beans

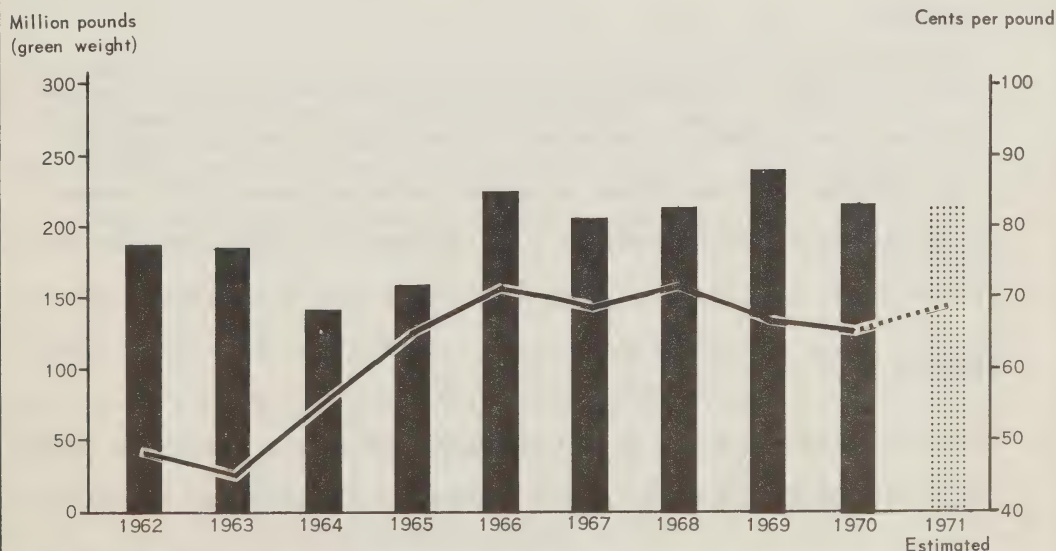
The overall demand for beans remains strong in both domestic and export markets. Most of the 1971 crop of Ontario white pea beans has been sold at a record average wholesale price. Exports are expected to make up 60 percent or more of total sales. Producer returns for white beans from the 1971 crop could average as high as \$10.25 per hundredweight compared with \$9.52 from the 1970 crop. The Ontario acreage of white pea beans in 1972 is expected to increase by up to 20 percent.

SUGAR BEET PRODUCTION – CANADA 1962-1971



ECONOMICS DIVISION
CANADA AGRICULTURE

PRODUCTION OF FLUE-CURED TOBACCO AND AVERAGE FARM PRICE – CANADA 1962-1971



ECONOMICS DIVISION
CANADA AGRICULTURE

Supplies of yellow-eye beans from the 1971 crop are large. About half the crop has been sold, most of it to the domestic market at prices about the same as last year. Attempts are currently being made to find export outlets for the balance of the crop. The acreage to be planted to yellow-eye beans in 1972 should equal or even be slightly less than last year.

Dry Peas

North American supplies of dry peas are sharply higher now than at the same time last year. Overall demand is weaker as export sales are lagging behind last year by 10 to 15 percent. There appears to be little prospect of any improvement in this situation for the balance of the crop year. A possible record carryover is expected at the end of the current crop year. At the present time, Canadian prices for dry peas are about the same as last year, but they may deteriorate in coming months, as the size of the carryover becomes apparent. The acreage of dry peas in Canada in 1972 is expected to decline, perhaps sharply, from the level of 1971.

Buckwheat

There are signs of continuing interest among export customers for Canadian buckwheat, particularly in Japan and the Netherlands. However, more than ample supplies continue to have an adverse effect on prices. The acreage to be planted in 1972 is expected to be the same or slightly less than last year's level.

Mustard

The 1971 mustard seed crop in Western Canada, 235 million pounds, was produced on a total of 265,000 acres. Yellow mustard, at 129,000 acres, accounted for

close to half the seeded acreage with oriental and brown mustard types at 81,000 and 55,000 acres.

Export demand for Canadian mustard seed increased in 1971 by ten percent to 169.6 million pounds. However, with ample supplies in store, contract prices in 1972 are expected to be the same as last year — about four cents a pound for yellow mustard and 2 3/4 cents a pound for the brown and oriental types. The 1972 acreage is expected to be close to the level of last year — about 265,000 acres.

Tobacco

Sales of domestically produced cigarettes in Canada in 1971 increased by two percent to 50.9 billion units. Sales of domestically produced cigars increased by 11 percent to 621 million units.

Exports of Canadian flue-cured leaf increased in 1971 by two percent to 48.5 million pounds. Leaf exports of Canadian burley increased by 14 percent to 483,301 pounds.

Sales of Ontario flue-cured tobacco by auction to February 25, totaled 141.8 million pounds, 14 million pounds more than for the same period last year. The average price to this date was 66.52 cents a pound. For the same period last year the average price was only slightly more, 66.88 cents a pound.

A further reduction in total flue-cured acreage is possible in 1972. The acreage of cigar tobacco in Quebec is expected to exceed 1971 levels. There may also be a slight increase in the Ontario burley acreage.

SEEDS OUTLOOK

Cereal, Oilseed, Corn and Forage Crop Seeds

Adequate supplies of most cereal and oilseed varieties will be available to meet expected domestic demand in 1972. Seed growers have harvested sufficient seed of the low-erucic acid varieties Span, Zephyr and Oro to meet the expected needs of commercial rapeseed producers.

Seed supplies of most of the principal crops used for forage will be sufficient to meet normal domestic demand. However, some seed, mainly certified alfalfa, will, as in past years, have to be imported from the United States where supplies are available. There are plentiful supplies of a number of kinds that are produced mainly for export such as alsike, clover, single-cut red clover, sweet clover, creeping red fescue, and meadow fescue.

The export market for seeds is generally stronger than a year ago. Retail prices for most forage seeds in 1972 are not expected to change substantially from 1971 levels and prices for some may be slightly reduced.

The continuing demand in Europe and Japan for certified seed of adapted varieties is expected to result again next year in an expanded acreage under the O.E.C.D. Seed Certification Scheme in Western Canada.

VOLUME 7

NUMBER 2

JUNE 1972

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Canadian Farm Economics is published bi-monthly by the Economics Branch, Canada Department of Agriculture, Sir John Carling Building, Ottawa, and is based on material prepared by economists of the Economics Branch.

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Subscription: This publication does not require a subscription. To receive this publication regularly, write a letter requesting to be placed on the mailing list, for CFE to the Managing Editor, Room 339, Economics Branch, Canada Department of Agriculture, Sir John Carling Bldg., Ottawa, K1A 0C5.

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CANADIAN FARM ECONOMICS

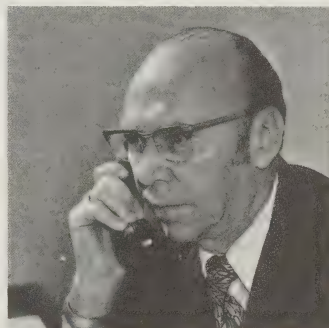
ALTERNATIVES IN ECONOMIC POLICY FOR CANADIAN AGRICULTURE

International trade and market development is the most important source of new revenue to generate agricultural growth.

Rural affairs, farm development and income distribution are areas which require, and will respond to, expanded and improved policy.

Food should be produced for a specific market - not produced in hope of later finding a buyer and a profitable price.

Planning should bind these policies into a cohesive program.



W.J. Anderson*

The Problem in Review

The rapid rate of technological progress in the farm sector in Canada over the past twenty years has greatly increased the productivity of agriculture so that significantly fewer total resources are now required to produce a given volume of output. Farmers have achieved the impressive increase in productivity by increasing the yields per acre and per unit of livestock, and by replacing labor with various forms of capital. The adoption of the new technology has had a major impact on agriculture. The following are some of the more important aspects.

First, the process has made the total output from agriculture buoyant because additional capital inputs such as equipment, fuel and fertilizer, and technical

improvements such as better varieties of crops, more productive breeds and scientific feeding of livestock, have tended to increase the total output of crop and animal products.

Second, farmers have expanded the scale of farm operations by investing in land and machinery as they adopted the capital-using and labor-saving technology. Simultaneously as a result of this investment farms have undergone major structural changes because the amounts of land, machinery and equipment per farm have been increased absolutely as well as relative to the amount of labor input. An indication of the shift in the structure of the farm business is that since 1951 the labor input in agriculture has decreased by about 50 percent while the capital input has increased by a large amount.

Third, the persistent tendency for output to expand has caused supply to outpace demand from both export markets and domestic sales. The basis of expansion of the latter is almost entirely restricted to population growth, there being little impact on the demand for food arising out of growth in consumers' incomes. In many instances export markets have been restricted by foreign

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governments whose policies preserve their domestic markets for the expanding output of their own agriculture.

This propensity of the output of Canadian agriculture to expand faster than demand has tended to keep farm prices low, which has resulted in favorable consumer food prices. However the other side of the coin is that at these prices farm income has tended to be insufficient to net an acceptable rate of return to the resources used in agriculture. For example, in the post-war period, characterized by rapid technological advance, the net returns to labor in the farm sector have been only one-third to one-half that of labor returns in the rest of the economy. Nevertheless farmers have been impelled to invest to become more capital intensive because this helps to reduce the costs of production. As one might expect under these circumstances some farmers simply do not make it, and this accounts for much of the poverty and low income which is found in rural communities.

The result is that the farm population has not fully shared in the growth of the real national income per capita even though agriculture has made significant contributions to that growth. This phenomenon has persisted as a national problem even during the periods of full employment and economic expansion of the fifties and sixties, and measures designed to alleviate it obviously have not been sufficient to bring labor income in agriculture to a par with that of other industries. Socially it becomes a problem, not only in terms of equity and distribution of the national income, but as fulfilling any sense of reward for services rendered, because the overall performance of agriculture in terms of productivity has been an important contribution to the growth in the level of real income in Canada.

The Main Policy Ingredients

The policy mix which has guided the development of Canadian agriculture covers five main areas which contain the goals of agricultural policy. Over the years these have had the support of the agricultural community as well as the general public, and have formed the basis of policy in both Federal and Provincial jurisdictions. The five ingredients are:

- (i) to maximize agricultural productivity,
- (ii) to permit competition to be the chief regulator of resource allocation,
- (iii) to encourage small, non-integrated, family controlled farm business units,
- (iv) to support the shift to capital intensity,
- (v) to develop agriculture with an orientation to international trade.

The emphasis on productivity, competition and family farms comes from conservative and agrarian traditions based on the classical intellectual views of population growth, competition, land supply, and technological advances in agriculture.

In the classical model, population growth is the dominant dynamic variable that shifts the demand for food. Moreover the Malthusian doctrine held that the growth of population is a powerful force creating a demand for food that strains resources to produce more than subsistence. This implies that the expansion of food production is of the utmost importance to society because food would tend to be scarce due to the growth in population.

The classical view with respect to land is based on the Ricardian observation that land is limited in amount and variable in quality. His analysis revealed that the returns to land currently under cultivation would increase as the intensity of cultivation increased, and as the pressure of demand brought progressively inferior land into production when population increased as foreseen by the Malthusian analysis.

A point from John Stuart Mill was that economic progress and growth would tend to increase the prices of agricultural products relative to manufactured goods. This conclusion came from two assumptions. One was that the possibilities of innovations were less in agriculture than in manufacturing; the other was that the expansion of production in agriculture involved increasing costs per unit of output while manufacturing expanded at decreasing cost. The increasing cost of food production in the classical model then came about either because of lower yields as agriculture expanded into inferior land or because of diminishing returns as operations were intensified on land already in use; in manufacturing however the classical model did not identify a factor such as land which would provide a similar cost barrier to the expansion of output.

The combination of the classical views with respect to population growth, land scarcity and slow technological progress in agriculture has sobering implications. One suggests that food would tend to be in short supply as population growth puts pressure on the land resources. The rent theory shows that the greater the need for food the greater would be the share of the national income accruing to land which indicates that income distribution would be increasingly regressive as population growth takes place. Thus land owners would become better off while everyone else became poorer. The outlook for slow progress in agricultural innovations further supports the pessimistic outlook.

Another feature of agricultural policy with a classical origin is the belief that competition is the best incentive to induce an industry to make the optimum use of resources to produce what society demands. This has led to respect for private ownership of resources and for free markets for marketing products. Moreover the implication of classical analysis is that the bargaining position of food producers would be strong due to the steadily rising demand. Therefore, it would seem logical to accept competition to restrain the tendency of food prices to rise.

The motivation for capital intensity stems from the nature of technological advances, which have been labor saving and capital using; the heavy reliance on international trade emerges from the extent and nature of agriculture's natural resource base in Canada, and the need for foreign exchange to pay for imports and returns on foreign investment.

Policy Implications

The policy implications of the classical analysis which would be in the general interest are mostly consistent with those which would satisfy the particular interests of agriculture. This fact probably accounts for the universal support which has been received for the main thrusts of agricultural policy. For example the individual farmer's interests and those of the consumer agree that it would be desirable to advance the productivity of agriculture as much as possible. Hence the general approval of the productivity theme as the main feature of public policy for agriculture, e.g. to support research in product development and resource use, to offer professional education and extension services, and to administer regulations associated with product standards and disease control. Also farmers have been urged to enlarge the farm business units and to make them capital intensive, both of which have been fostered by making capital available from public institutions on generally better terms than have prevailed in the private financial market.

One concern arising out of the classical view would be with distributing the benefits from the expected increase in land values. Canadian policy has met this concern by distributing land ownership as widely as possible among farmers. As an example, in the days of Western settlement the large public domain was converted to private ownership by making land available in small units, thereby distributing it among a large number of people. More generally agricultural policy has continued to encourage, by various means, the medium-size, land owning, owner-operated, family-type farm as the basic business structure in the farm sector. This satisfied the

agrarian view of fairness, and preserved classical competition which was strongly supported by the widespread respect among farmers for individual effort and initiative. This policy by coincidence also produced about the right scale of farm enterprise for the then existing technology, and about the right amount of capital accumulation for a private retirement fund.

This classical agrarian orientation of agricultural policy is not a satisfactory basis for understanding the income problem which arises when supply tends to outrun demand. So agricultural policy has gone warily into those programs aimed to supplement income because guidelines to income standards are not included in the classical system. Moreover, the process of maintaining an adequate income is fraught with controversy not only between farmers and consumer-taxpayer interests, but within the farm sector itself. Accordingly the farm income problem has been approached gingerly and with less than comprehensive programs, implying that the problem was an emergency rather than a chronic one.

Examples of excursions outside the classical framework are modest price supports under the guise of stabilization, though the recent two price system for wheat is more overtly an income transfer, some direct income supplements justified on the concept of short run stabilization, and some resource development programs. Laws have been enacted to strengthen farmers' bargaining power in the domestic market by permitting the formation of producer controlled marketing boards. No attempt has been made to reduce the intense competition among farmers for land resources or in the race to adopt new technology. Other programs are in the making to enable farmers in the older age groups to retire and to provide adequate education, social services, farm capital and management services for those who remain in agriculture. There is also some move to reallocate the use of farm land which technological development has rendered obsolete. For the most part the policies which depart from the classical ones have been designed to correct what seem to be weaknesses in the commodity and factor markets.

Additional Considerations for Present Day Policy Making

Contemporary and future agricultural policy has to build upon this background and take into account new social and technological factors together with the contemporary facts of Canadian economic life.

General - The most important characteristics of the technological and social factors which affect policy making and planning are:

- (i) the increasing rate at which **new technology** is created quickly makes current technology, machinery, skills and organizational structures obsolete;
- (ii) a **new awareness of social and political problems** has made policy making a much more intricate and sensitive task;
- (iii) **new management techniques** in the areas of risk and uncertainty allow managers to control larger and more complex systems.

The **first point** relates to the time dimension. Historically as major social changes associated with, for example, the agricultural revolution, the industrial revolution or the decline of the feudal system took place, the rate of change was sufficiently slow to permit new institutions to evolve. Even so, the process was traumatic during various stages in these social evolutions. Now the world is confronted with exponential rates of change in major variables. For example, modern technological capacity includes the possibility of weather control, of ecological control and of the use of computers to displace 50 to 70 percent of the manpower now used. On the other hand saturation points are being reached in some of the resources. Scientists speak of the complete depletion of mineral and traditional energy resources in the near future. Some of the macro-natural resources such as the atmosphere, the oceans, and the Arctic land masses are in danger of permanent damage from pollution. The adaptation of institutions to cope with these changes at the rate at which they are occurring taxes the imagination.

The **second point** concerns the incisive social and political awareness of recent years, which insists that good business policy should also be good social policy, that demands more accountability from special interest groups and that raises human considerations in the scale of values. Only recently has industrial planning and policy making had to pay serious attention to other than the classical technological and economic factors. Now broad social and political issues with imprecise qualitative and difficult-to-measure variables characterize issues in these areas and these issues have advanced from their background status to a more prominent position. Who would have thought ten years ago that institutions would have developed the sensitivity to social and political variables which now permeates the decision making process? Consumerism, the rights of minority groups, pollution, environment and other social costs as well as income distribution have been elevated as public issues, so that all organizations, private and public, have to include them in the planning calculus. In addition to the internal complexities which these considerations introduce, they also force organizations to consider the

wider social implications in decision making, and to give greater weight to the qualitative considerations.

The **third point** concerns the developments in management technology which have provided a substantial improvement in the tools to deal with the interaction of variables, probabilities and information flows in a complex system. The new information generated by management technology has greatly increased the knowledge of the dynamics and interactions, and the power to control an organization. This enables management to view the organization as a system in which management's role is to control a complex system characterized by variety rather than simply managing machines, men and money in a line organization. That concept of management greatly increases the potential of rational planning for an industry.

The result in respect of policy and planning is that the continual growth of technology in the computing-communication area has enabled organizations to cope more easily with the forces of change. That fact, together with general technological capabilities, leads to the possibility of constructing the future rather than forecasting it by extrapolation. On the other hand, the rapid rate of change coupled with greater social and political involvement increases the number of variables and enhances the degree of uncertainty. Thus, one who holds that the variables can be managed so as to control the future also has to take into account the fatalistic view that the course of events is too rapid and too complex to be manipulated so as to achieve a meaningful optimization.

The preceding paragraphs briefly indicate that additions to classical considerations in planning and policy formulation include new analytical tools in management technology, new complexities of social and political awareness, and the fact that the rate of change of all variables has been telescoped, thereby increasing the urgency of decision making. The danger is that the greater complexity of the variables, combined with shortening the time factor, may prevent society from making use of the power inherent in modern technology to manipulate the variables so as to maximize the total social benefits.

Contemporary

Within that broader background the formation of agricultural policy has to take account of several facts of Canadian economic life.

One is that the Canadian economy has experienced **unemployment** at a disturbingly high level over the past few years, and that large numbers of persons are in the

age groups which will put them on the labor market in the 1970's. Also, there has been a significant increase in the interest rate. These make it more difficult to pursue the high labor productivity, high capital intensity goal.

Recently the world has had to face up to some major issues concerning **trade policy**, the balance of payments problem of the United States, and exchange rates, the total of which has had far reaching implications to Canada's international trade position vis-a-vis the United States, and to agricultural trade in particular. The pressure that impelled the United States to insist on changes in trade and exchange rate policies had been building up for some time. In the absence of a self-adjusting mechanism provided by flexible exchange rates, the situation led to a chronic trade deficit in the balance of payments of the United States. Rather suddenly the United States announced that it could no longer tolerate the continued imbalance and proceeded arbitrarily and dramatically to apply a surcharge and other powerful techniques to reduce the deficit. By so doing the United States highlighted its balance of payments difficulties and this forced certain countries, such as West Germany and Japan, to revalue their undervalued currencies. It accomplished what the United States also wanted, namely to induce the trading nations to examine the entire structure of world trade with the objective of liberalization.

From the broader changes in international economic relations the United States has emerged in a new more powerful position as an exporter. To exploit this position, the U.S.A. has embarked upon strong export promotion programs designed to increase the physical volume of exports, which, together with a generally devalued dollar, will redress the unfavorable balance of payments in the trading account. The result is that the U.S.A., always a formidable competitor in both Canada's export and domestic agricultural markets, has now emerged in an even stronger position and with a more aggressive stance, by virtue of the devaluation of the over-valued dollar and the concerted effort to step up agricultural exports.

Another factor on the international front is the **green revolution** which is making a considerable impact on the yields of cereal crops in the hitherto low productivity regions of the world. Already it is clear that the green revolution will considerably change the basic supply prospects. In so doing it may introduce a new source of cereals for the international market in that some developing countries may find the need for foreign exchange a sufficient incentive to become exporters of cereals. Furthermore, the new potential from developing countries in cereals has been augmented by greater

productivity in the developed countries so that all told the prospect is for a buyer's market in cereals.

Other issues with strong social overtones have come to the fore, such as concern for the **overloaded environment, pollution, and food safety**. The cost of coping with environmental problems and pollution will reach staggering amounts, and for the future one can be certain that the public will insist that they become part of the costs of the particular industries which are associated with pollution. Costs related to food safety and some other aspects of pollution may fall on agriculture, but how much this will amount to is not easy to determine. In the area of **social factors**, the recognition that poverty is a serious social blight, the concern for a balanced regional development and the overall problem of the rural community have all surfaced as part of the set of problems for agricultural policy and planning.

Alternative Approaches to Policy

1. **Maintain the current approach** which is based on productivity, capital intensity, international trade, competition and family farms as described above. This philosophy is not laissez-faire because the government assumes an active and positive role in promoting these goals, but it does not enter directly into production decisions or resource allocation.

Continue to supplement this approach, as has been done, by various measures as the need becomes apparent. Examples are: income stabilization, income transfers, strengthening producers' bargaining power and regional development assistance. These have been introduced to deal with the income problem which comes about in the circumstances of the rapidly advancing labor saving technology, because the immobility of labor is such that it takes a severe squeeze on income to effect the needed transfer of labor. The fact is that the lives of people are too short to make the income squeeze a satisfactory technique to obtain equilibrium returns to labor in agriculture.

The approach has a distinct middle class farmer bias. It looks with disfavor on large scale farm operations and particularly those which are vertically integrated downward from the top of the marketing chain. It does not come to grips with the poverty problem in agriculture or the strains on the rural community when depopulation occurs.

2. There are proponents of a policy approach which would shift the emphasis of agricultural policy to **maximizing returns from the domestic market**. This

approach would take advantage of the inelastic nature of the domestic demand for food, and use restrictive supply management techniques to raise prices, thereby increasing the revenue of agricultural producers.

This would be an inward looking approach and would regard the export market as a secondary source of demand whose influence on domestic prices should be minimized. This attitude toward foreign trade is supported by the argument that international agricultural prices and the volume of trade have been distorted by other countries' agricultural policies. These have encouraged overcapacity, which has led to restrictions on imports and subsidies to exports, which, in turn, have resulted in "unrealistic" prices in international markets.

This policy, in order to be effective, would have to be based on four main operational features, (i) import restrictions and/or tariffs would be needed to secure the domestic market, (ii) farmers' production and/or marketing decisions would have to be controlled by quotas under government management or farmer controlled boards, (iii) agricultural commodities not sold on domestic markets would be exported, (iv) the highest domestic prices would be paid either by consumers as higher food prices or by taxpayers through government subsidies.

The approach contains built-in conflict-inducing elements between agriculture and the rest of Canada in that the high price policy would be regressive in its income effect on consumers and/or would add an additional burden to the taxpayer. As between farmers, quotas, if negotiable, would give flexibility to individual farm units but quota values so established would confer windfall gains to the original owners of quotas. On the other hand, if not negotiable, quotas would grant exclusive rights to produce. Moreover, since the approach is inward looking and non-developmental it would entail massive problems of resource adjustment as agriculture adapted to the small but secure domestic market. This in turn would generate severe regional conflicts of interest among farmers to share the restricted domestic market.

In addition to the fact that an inward looking approach to agricultural policy is essentially a negative one, such an approach also projects a false image of agriculture, portraying it as an industry which is not capable of standing on its own. On the contrary agriculture has an excellent record of performance which is the more impressive since it has been achieved in a market environment where imperfect competition has favored the buyers of farm commodities and the suppliers of farm inputs. Moreover the protection and subsidies received by agriculture have not been large in

relation to the contribution to Canadian economic growth which low food prices have made to capital accumulation, the large amount of agricultural export revenue has done to support the value of the dollar, and the declining farm labor force has contributed to the supply of labor available for industrial expansion.

The restrictive approach also overlooks the position of comparative advantage which Canadian agriculture holds in some commodities and could probably attain in others by reason of the high level of skill and management ability in agriculture plus the advanced production and marketing technology, the research facilities, the infrastructure and the favorable natural resource base available to it.

3. A more positive approach would be one that exploits these agricultural assets and builds upon the good features of traditional policy by extending those already underway.

Essentially this would involve adopting an **outward looking and expansionary approach** that would take a more comprehensive view of agricultural policy than the current one, would be more market oriented and more aggressive in international trade, would be expansionary and developmental in its outlook, and contain a greater element of concern for the economic and social well-being of agriculture. In contrast to the inward looking approach, which would emphasize restriction and resource adjustment, this one would concentrate on comparative advantage, resource development and expansion. It would therefore tend to obliterate regional conflicts of interest by providing the policy base in which farmers, agribusiness, provincial governments, the Federal Government, consumers and regions would have a mutual interest. The approach would be expressed in a development oriented, outward looking set of agricultural policies, based on confidence that (i) Canadian agriculture will remain efficient and competitive and (ii) international trade is very significant to Canadian agriculture, contains a strong potential for expansion, and can be further liberalized.

Operationally such an approach to policy would contain four significant features: (i) a great deal of emphasis would be placed on foreign trade policy and foreign market development as the source of new revenue for agricultural development; (ii) the policy responsibility would be much expanded in the area of rural affairs, farm development, and income distribution; (iii) the various elements of commodity programs would be integrated under a food systems management in which the goal of productivity would be pursued with a full market orientation; (iv) unified leadership and planning

would be provided to integrate the commodity programs, resources development (research), and the policies for rural affairs, farm development and income distribution.

This approach would rely heavily on sophisticated forecasting of market needs, indicating optimum resource allocations and persuading government institutions, farmers and processors to allocate resources and make production decisions to produce at a profitable level and avoid surpluses. The resource allocation problem would be assisted by farm development programs and with more emphasis on human development and income distribution. Commodity stabilization programs would be consistent with this approach. The direction of research and other services for agriculture would be guided into areas of most likely payoff.

The area of greatest significance is the one of international trade and market development. Herein lies the most important source of new revenue to generate

agricultural growth. It is also the area of greatest urgency for action because of the far reaching developments in international economic relations which are now taking place. Knowing that Canadian agriculture has the assets to give it a competitive advantage in many commodities, Canada cannot lose by pressing hard in this area.

There are five main ingredients to taking this aggressive stance: (i) press the case for Canadian agricultural products in the GATT negotiations; (ii) join with the U.S.A. in pressing for longer-term world trade liberalization; (iii) be aggressive and sophisticated in developing export markets — this means careful analysis of the income and subtleties of consumer preferences in various countries both where we now export and where there is a potential for exports; (iv) keep the value of the Canadian dollar so as to make Canadian dollar revenue from agricultural exports as high as possible; (v) recognize that our competitors are using food aid for export market maintenance, penetration and development.

CHANGING COMMUNITIES IN RURAL SASKATCHEWAN

"the downward trends in the small communities will continue . . . (and) many communities . . . may well disappear, as indeed some already have."

Many small prairie communities are in a serious situation. As the rural to urban movement continues, some small communities are contracting. As farms expand and mechanize, the small community is left with fewer people in its surrounding area. More and more people are becoming concerned with the problems of these rural and agricultural communities. Research is now underway by several agencies in an effort to measure and analyze the problem.

The Economics Branch is presently conducting research and publishing reports under the general title *Prairie Regional Studies in Economic Geography*(1) which describe the socio-economic conditions in selected regions. The emphasis throughout is on grain farms and the communities which serve them. Two of the most recent reports describe the Weyburn and Eston-Elrose regions of Saskatchewan. These two areas comprise 7.5 million acres and contain 132 communities (grain delivery points).

The objectives of this article are:

- 1) to summarize and highlight the major characteristics of the various types of communities in these two regions and to discuss the trends occurring in the numbers and kinds of services, population, and post office revenues in the communities.
- 2) to summarize and highlight some of the relationships and trends in grain marketing in the communities.
- 3) to comment on the future of small communities in the light of these trends. The findings of researchers Zimmerman and Moneo(2) are also considered.

*Mr. H.R. Fast has been an economist in the Regina office of the Economics Branch for the past three years. He has co-authored two of the *Prairie Regional Studies* reports and is currently working on others in the series.



Henry R. Fast*

COMMUNITY CHARACTERISTICS

Types of Communities

The communities were classified into groups. This classification is based primarily on the number of retail, commercial and public services in each community.

- (1) "Too Small to Classify" - communities offering 0 to 2 services,
- (2) "Hamlets" - 3 to 10 services,
- (3) "Villages" - 11 to 35 services,
- (4) "Towns" - 36 to 74 services,
- (5) "Greater Towns" - 75 or more services but excluding "Cities",
- (6) "Cities" - number of services are not specified. This classification is applied to communities generally accepted to be a City¹

Table 1 shows the distribution of the number of communities in each classification. Of 132 communities or grain delivery points in the two regions 37.1 percent were Too Small to Classify, the largest category. Villages and Hamlets were next, 26.5 and 22.0 percent respectively. In other words, 85 percent of communities fall into the three smallest categories. While the data for each region are not shown separately, the distribution by type of community and the average number of services per community were found to be very similar between regions.

¹The service classification used in the Weyburn study was slightly different than that of Eston-Elrose. However, for purposes of analysis in this article the classification was modified to coincide with the Eston-Elrose study.

Table 1. Distribution of Various Types of Communities in the Weyburn and Eston-Elrose Regions of Saskatchewan

Type of Community	No.	Percent
Too Small to Classify (0-2 services)	49	37.1
Hamlets (3-10 services)	29	22.0
Villages (11-35 services)	35	26.5
Towns (36-74 services)	11	8.3
Greater Towns (75 or more services)	6	4.6
Cities (Not specified)	2	1.5
TOTAL	132	100.0

Services

A clear picture emerges when one begins analyzing the various characteristics of communities in each classification group.

The average number of services in each type of community is also shown in Table 2. A typical Village had 18 services, a Hamlet seven and a community Too Small to Classify had less than even a single service. Those communities with zero services consisted of single-elevator points that had been completely abandoned or were just being used for grain storage. The average Town had triple the number of services (53) of a Village, despite the definition of Towns being places with a maximum number of services only double that of Villages. The average number of services in a Greater Town nearly triple again to 147. Because of the wide range and complexity of services available in a City, it is difficult to establish a norm for this category. The only Cities in the Weyburn and Eston-Elrose regions are Weyburn and Estevan and it is estimated that each of them has 350-400 services. Again, it is true that 85 percent of the communities had only 18 services or less, on the average. It should be stated that the survey included *all* communities in these regions, not just a sample.

Figure 1 depicts the geographic areas and communities in the Weyburn and Eston-Elrose regions and symbolically shows the geographic distribution of the community types. In general, Greater Towns and Towns have developed in a fairly well spaced pattern, with numerous smaller points in between along the railway lines.

What kinds of services does one typically find in the various types of communities? Again, a definite pattern

can be distinguished in that communities within each classification have similar kinds of services. Table 2 clearly illustrates this point. Communities Too Small to Classify had none of the services listed except perhaps a grain elevator. Approximately 67 percent of the 49 smallest communities had at least one active elevator. At the other extreme, Cities had all services listed while two thirds of the Greater Towns had a funeral home, 83 percent had a hospital and 100 percent had all the other services listed.

Most Hamlets have a post office, church or meeting hall, and a general store but there is a less than 50 percent chance of finding any other kind of service. About three quarters of the Villages have a school but only 17 percent offer senior matriculation.

Just as one can organize communities into a hierarchy, services can also be ranked into a hierarchy by their degree of specialization and by frequency. In Table 3, services are in descending order of frequency from left to right.

Table 2. Average Number of Services and Population of Various Types of Communities in the Weyburn and Eston-Elrose Regions

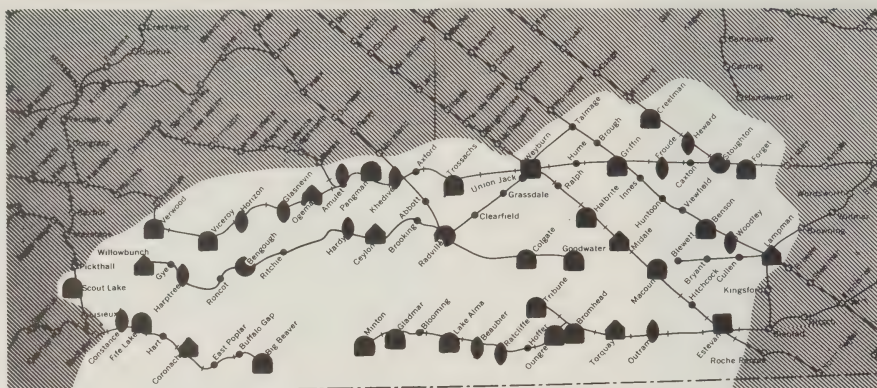
Type of Community	Avg. No. of Services	Avg. Population
Too Small to Classify (0-2)	Less than 1	8
Hamlets (3-10)	7	34
Villages (11-35)	18	110
Towns (36-74)	53	511
Greater Towns (75 or more)	147	1,731
Cities (Not Specified)	375	9,450

Population

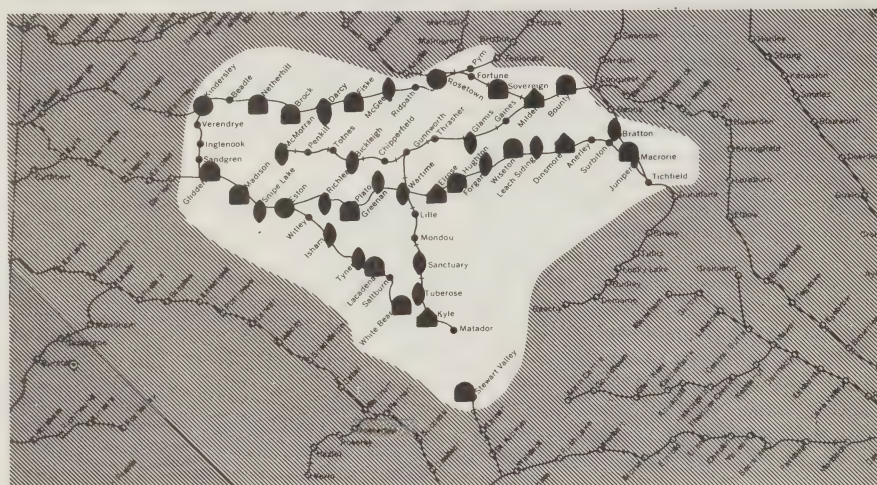
Table 2 shows the average population of the various types of communities. On the average, Villages had 110 people, Hamlets 34, and Too Small to Classify, only eight inhabitants. A typical Town, with 511 people, had nearly five times the population of a Village, and Greater Towns had triple the population of an average size Town, or 1,731. The two Cities each had over 9,000 inhabitants with an average of 9,450. As one would expect, there is a close relationship between population and number of services.

Population trends also tell a story. Figure 2 is an index of total population in each group of communities from 1951 to the latest year for which data were available¹. For comparison, the total population of Saskatchewan is also shown.

¹Calculated from Table 4 (updated) in "The Weyburn Region of Saskatchewan" and Table 5 in "The Eston-Elrose Region of Saskatchewan."



Weyburn Region (1969)



Eston - Elrose Region (1971)

LEGEND

City	■	Village	■
Greater Town	●	Hamlet	●
Town	▲	Too Small to Classify	●

Classification of Communities in Specified Regions of Saskatchewan

FIGURE 1



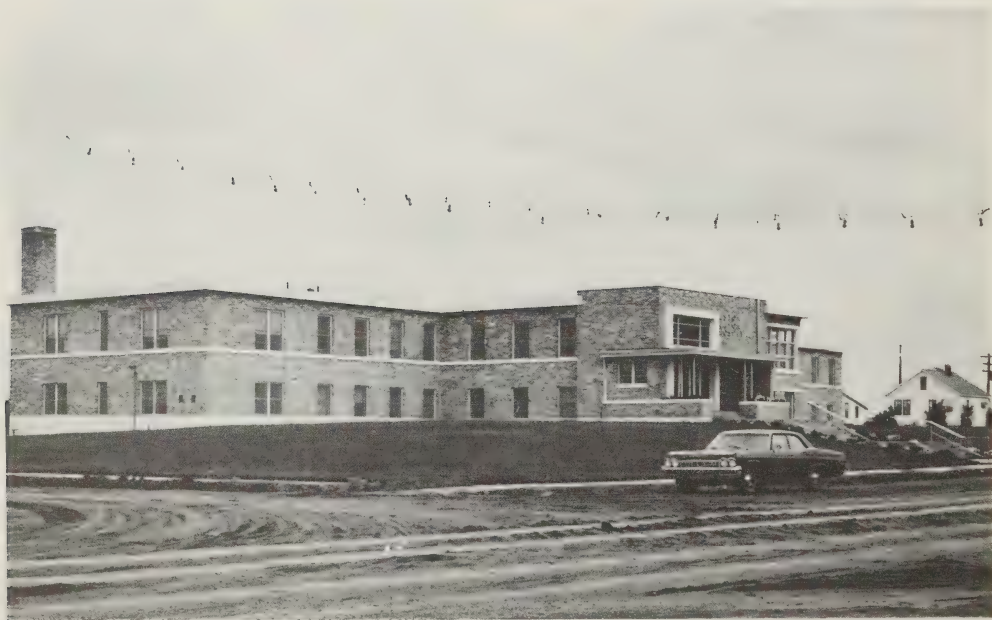
Verendrye, Sask. typifies a community Too Small to Classify. The elevator was emptied and closed during the summer of 1971. (Photo: A.W. Burgess, 1965).



Richlea, Sask. with eight services in 1971 was classified a Hamlet. (Photo: A.W. Burgess, 1965)



Wiseton, Sask., a larger than average Village, had 28 services in 1971. (Photo: A.W. Burgess, 1965).



Eston, Sask. The Union Hospital is one of the 114 services available in this Greater Town, based on a 1971 survey. (Photo: A.W. Burgess, 1965)

INDEX OF POPULATION OF COMMUNITIES BY TYPE, WEYBURN AND ESTON-ELROSE REGIONS OF SASKATCHEWAN, 1951 TO 1971

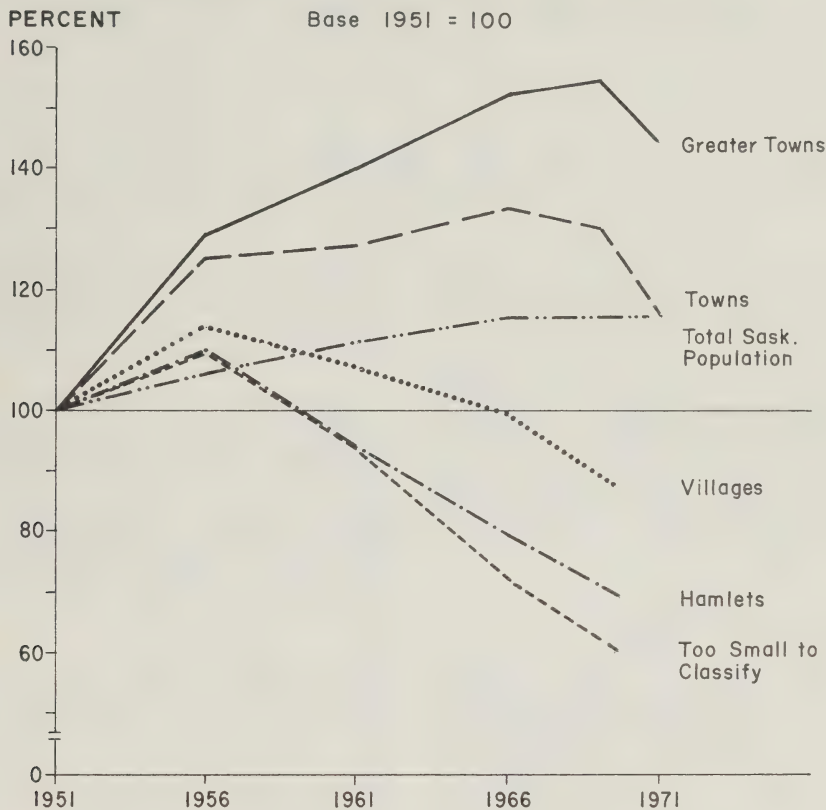


FIGURE 2

All groups increased between 1951 and 1956 but since then the population of Villages, Hamlets and points Too Small to Classify has decreased at a rather rapid rate. Towns and Greater Towns grew steadily until 1966, but dropped by 1971. (Data for January 1, 1970 are estimates and in view of preliminary 1971 Census data, I suspect the 1970 estimates were slightly high. Of course, it is also possible that the final 1971 figures will show some revisions upward from preliminary estimates.)

Both the number of people living on census farms in the two study regions and in all Saskatchewan have steadily

declined at roughly the same rate, as shown in Figure 3¹. This downward trend together with the upward population trend of larger communities illustrates the well known rural to urban migration phenomenon.

Post Office Revenue

Another yardstick of socio-economic activity of a community is the dollar-revenue generated by the post

¹Calculated from Table 5 in "The Weyburn Region of Saskatchewan" and Table 6 in "The Eston-Elrose Region of Saskatchewan."

Table 3. Percent of Communities by Type Having Specified Services, Weyburn and Eston-Elrose Regions

Type of Community	No. of Communities	Funeral Home	Hospital	Water/ Sewer Works	High School (Gr. 12)	Farm Equip. Dealer	Bank/ Credit Union	Hotel/ Beverage Room	School	Bulk Fuel Dealer	Service Station Garage
— percent —											
Too Small to Classify	49	0	0	0	0	0	0	0	0	0	0
Hamlets	29	0	0	0	0	3	3	3	14	31	42
Villages	35	0	3	9	17	26	29	43	74	77	91
Towns	11	9	73	73	100	91	100	100	100	100	100
Greater Towns	6	67	83	100	100	100	100	100	100	100	100
Cities	2	100	100	100	100	100	100	100	100	100	100

office. An index of total post office revenue for each group of communities is shown in Figure 4, using fiscal year 1957-58 as base. The patterns of change are similar to population trends but with wider extremes. Post office revenues in Towns and Greater Towns increased substantially while post offices in points Too Small to Classify actually disappeared by 1969. That is, there was not a single post office left open in any of the points Too Small to Classify, hence, no revenues were generated. Revenues in Hamlets and Villages remained relatively stable, with Villages just above the base line and Hamlets below.

GRAIN MARKETING ACTIVITY

Delivery Permits and Population

All communities, except one third of the group Too Small to Classify, serve as grain delivery points for grain producers. The average number of Canadian Wheat Board delivery permits issued for each type of community is shown in Table 4. If one assumed that delivery points and grain producers were uniformly scattered throughout a given geographic region and if one considered only the grain collection service, one would theoretically expect the "market area" or hinterland of each delivery point (and, hence, the number of delivery permits issued at each point) to be equal, inasmuch as producers would seek to minimize hauling costs by delivering their grain to the nearest delivery point. To the extent, however, that producers also consider the availability of other services at a delivery point when deciding where to deliver grain, the effect is to enlarge the hinterlands of larger communities and shrink those of smaller communities. Of course, producers also take into account many other factors such as best road access, available grain storage capacity, preference for a grain elevator company and so on.

At any rate, Table 4 clearly shows that large communities attract many more producers than do small commu-

nities. The number ranged from 26 permits at points Too Small to Classify to 261 at Cities. Then, too, the average number of farm acres in each hinterland increase directly with size of community. Average acreage ranged from 21,085 to 178,820 acres.

An estimate was also made of the approximate number of people living within each grain delivery hinterland. This was calculated for each region by dividing the total population on census farms by the total number of delivery permits, and then multiplying by the average number of permits per community. Thus, associated with the 45 permits issued at a typical Hamlet, there are approximately 141 farm people living in the open country surrounding the Hamlet.

An interesting pattern emerges when one compares the estimated farm population per hinterland with the average population per community shown earlier in Table 3. The average community Too Small to Classify had a population of eight, and 82 people in the immediate area — a ratio of about 1 to 10. Hamlets had an average population of 34 with 141 people in the countryside — a ratio of about 1 to 4. For Villages this ratio declines further to about 1 to 2 (110 to 235) and continues to decline for Towns, Greater Towns and Cities. In fact, the relationship becomes reversed so that the number of people in the community outnumber those in the surrounding area. The actual ratios are: Towns 1 to 0.7, Greater Towns 1 to 0.3, and Cities 1 to 0.08. This seems to suggest that the life of the very small center is very heavily dependent on grain deliveries whereas the life of the larger center is not. Of course the larger centers derive their livelihood from many other services and activities besides grain delivery.

Adjustments in Grain Marketing Facilities

Changes in the grain handling and transportation system have been slower in coming than other social and

urch eting all	General/ Confectionery & Grocery	Post Office	Active Grain Elevator
0	0	0	67
79	55	79	100
97	91	100	100
00	100	100	100
00	100	100	100
00	100	100	100

INDEX OF FARM POPULATION, 1951 to 1966

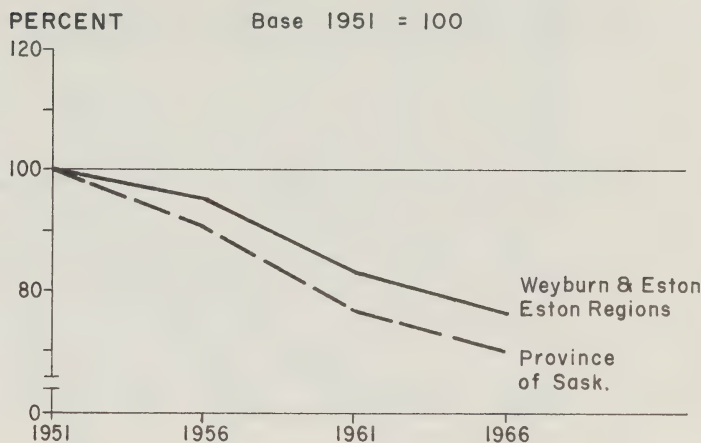


FIGURE 3

Table 4. Average Number of Grain Delivery Permits and Estimated Farm Population in Each Hinterland by Type of Community, Weyburn and Eston-Elrose Regions, Crop year 1969-70

Type of Community	Avg. No. of Permits per Community	Avg. No. of Farm Acres Per Hinterland	Est. Farm Population Per Hinterland
Too Small to Classify*	26	21,085	82
Hamlets	45	38,165	141
Villages	77	62,121	235
Towns	117	91,109	358
Greater Towns	172	137,005	534
Cities	261	178,820	763

*Including only those delivery points open in 1969-70.

economic changes in Prairie communities. Many communities have lost commercial and public services while the grain elevator and rail line remain. While an often expressed fear is that if the rail line and associated elevators in a particular community are removed it will mean death for that community¹, the above analysis suggests that death has come to some communities despite the continued presence of the rail line and grain elevator. Other communities exist that have never had a railway or an elevator but continue to serve the needs of

¹Sometimes this view also includes the implication that if the rail line and elevators were permitted to stay, the death of the community in question would not come about.

Table 5. Farm to Elevator Hauling Distances, 1962 and 1969

Region	1962		1969		Change in Average 1962-69
	Maximum ^a	Average	Maximum ^a	Average	
	— miles —				
Weyburn	30	6.60	26.0	6.98	+0.38
Eston-Elrose	27	6.16	28.0	6.53	+0.37

^aThe minimum distance was assumed to be 1.0 mile.

people in a locality. Examples are Martensville and Annaheim in Saskatchewan and Steinbach in Manitoba.

One type of "rationalization" that has occurred is the swapping of country grain elevators among grain companies resulting in a greater number of single-company delivery points. The number of single-company points in both study regions between 1962 and 1969 increased from 43 to 53, representing an increase from 32.6 percent of the total number of delivery points to 42.1 percent ¹. For all Saskatchewan, single-company points increased from 31.0 percent to 35.3 percent of the total. Thirty-three delivery points (25 percent) in the Weyburn and Eston-Elrose regions lost one grain elevator company. Of the 33 points, 15 resulted in single-company points, 12 resulted in delivery points still having more than one company represented, and six

¹More recently, the purchase of Federal Grain Ltd. by the three Prairie Wheat Pools in early 1972 resulted in approximately another 16 single-company points in the two regions.

INDEX OF POST OFFICE REVENUE, WEYBURN AND ESTON-ELROSE REGIONS OF SASKATCHEWAN, 1957-58 TO 1968-69

PERCENT

Base 1957-58 = 100

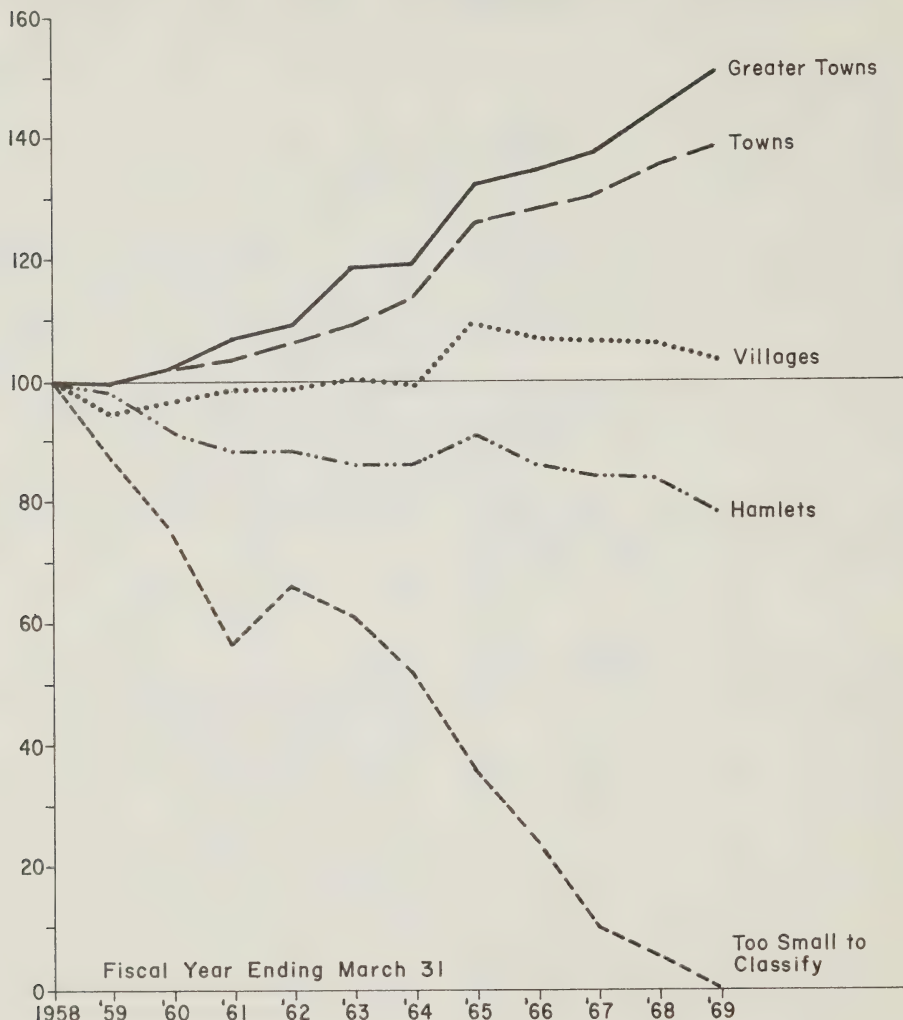


FIGURE 4

Table 6. Summary of the Number of Grain Elevator Companies Represented, Storage Capacity and Through-Put Ratio At Delivery Points in Specified Regions

	Weyburn Region	Eston- Elrose Region	Both Regions	All Saskatchewan
Total no. of delivery points: 1962	72	60	132	1,096
1969	68	58	126	1,037
No. of points that closed, 1962 to 1969	4	2	6	59
Percent change	-5.6	-3.3	-4.5	-5.4
No. of single-company points: 1962	28 (38.9%)	15 (25.0%)	43 (32.6%)	340 (31.0%)
1969	31 (45.6%)	22 (37.9%)	53 (42.1%)	366 (35.3%)
No. of points at which the no. of companies declined by one, 1962 to 1969	14 (19.4%)	19 (31.7%)	33 (25.0%)	n.a.
No. of single-company points resulting from a decline of one company, 1962 to 1969	6	9	15	n.a.
No. of points at which the no. of companies, increased by one, 1962 to 1969 ^a	2	1	3	n.a.
Total storage capacity (Thousand bus.)				
1962	9,146	12,863	22,009	192,877
1969	10,398	14,276	24,674	210,415
Percent Change	+13.7	+11.0	+12.1	+9.1
Through-put ratio: ^b 1962	3.2	1.5	2.2	2.0
1969	2.0	1.4	1.7	1.7
Avg. 1960-69	2.1	1.4	1.7	1.7

n.a. Not available.

^aAll delivery points in this category had 3 companies and increased to 4 companies.

^bThe through-put ratio is the total number of bushels received in one year divided by total bushel storage capacity.

points closed. One delivery point, showed a decline of more than one company, but three delivery points gained one grain company each between 1962 and 1969.

Total storage capacity did not decline along with the decrease in number of delivery points but rather increased 9.1 percent in Saskatchewan and 12.1 percent in the two regions, as shown in Table 6. Receipts of grain at country elevators in the Weyburn region in 1969 were 28.7 percent lower than in 1962; in the Eston-Elrose region they were 5.4 percent higher in 1969 than in 1962, and for all Saskatchewan receipts were down 8.4 percent. Through-put ratio is a function of grain receipts and storage capacity. The combination of a drop in receipts and an increase in capacity resulted in lower through-put ratios in both the Weyburn region and for all Saskatchewan. The 11.0 percent increase in capacity in the Eston-Elrose region evidently more than offset the 5.4 percent increase in grain receipts because the through-put ratio dropped from 1.5 in 1962 to 1.4 in 1969. These data indicate that the grain companies had more storage available relative to receipts in 1969 than in 1962.

Further details of changes in grain marketing facilities are given in Table 5.

FUTURE OF THE SMALL COMMUNITY

That the structure of rural communities is changing is obvious. Historic trends in population and post office revenue indicate, almost dramatically, the decline of a large proportion of communities. As long as farm population continues to decline and other factors such as transportation continue to improve, population and economic activity of present-day Villages, Hamlets, and points Too Small to Classify will continue to decline. At time of writing, 1971 Census data of farm population have not been released, but I expect that in Saskatchewan the number will be down once again from the 1966 level. If so, the downward trends in the small communities will continue, and as the effects work their way through the hierarchy, decline will again be evident from the 1976 Census.

A recent report by Zimmerman and Moneo refers to the phenomenon of the persistence of the small community (2, pp. 21f). From 1910 to the present, the percentage distribution of various sizes of communities has remained relatively constant, graphically forming a reverse "JAY" type curve. According to the data source (Dun and Bradstreet), the total number of communities in the Prairie Provinces declined from 2,874 in 1951 to



Abandoned stores located in the Hamlet of Carlton, Sask. (Photo: A.W. Burgess, 1965)

2,327 in 1966 — 547 centers. Then the authors state that this 19 percent decline was not the result of very small communities going out of existence but rather due to the fact that many centers were being combined and reported along with larger, nearby communities. They also state that, “the littlest communities are still with us and show no signs of disappearing” (2, p. xv).

I have no reason to quarrel with the findings that the absolute number of small centers continued to 1951 and that in relative terms they have persisted to the present day. This is an important and very interesting observation. However, from my experience and observations of numerous Saskatchewan communities, I find it difficult to accept that virtually no communities have gone out of existence and that most of the very small communities will continue to exist in the future. In a great many communities one finds abandoned stores, garages and other places of business as well as abandoned residences, churches, schools, meeting halls and ice rinks. All that is left is a grain elevator. Table 2 showed that even the elevator had been abandoned in one third of the points Too Small to Classify.

The point I am making is that one can find vestiges of communities where once “viable” communities existed.

These communities have disappeared and are not even used any longer for convenience or “stop-off centers”, to use Zimmerman’s and Moneo’s terminology. A “stop-off center”, is defined as having, “at least two

businesses including a grocery or a general store” (3, p. 10). I agree that the new social form of the Prairie community, of which they speak, will probably be a stabilizing period in which community forms of the past will better adapt to the modern world division of labor. I suggest that as this happens many communities Too Small to Classify, many Hamlets and even some Villages may well disappear, as indeed some already have.

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(2) Carle C. Zimmerman and Garry W. Moneo, *The Prairie Community System*, Agricultural Economics Research Council of Canada, Ottawa. June, 1971.

(3) Carle C. Zimmerman and Garry W. Moneo, "The Total Community of the Canadian Wheat Prairies", *Canadian Journal of Agricultural Economics*, 18: 6-28, November 1970.

The author is indebted to T.O. Riecken, J.K. Wiens and John W. Channon for their useful comments on an earlier draft of this paper. Views expressed in this paper are solely those of the author and not necessarily those of the Economics Branch.

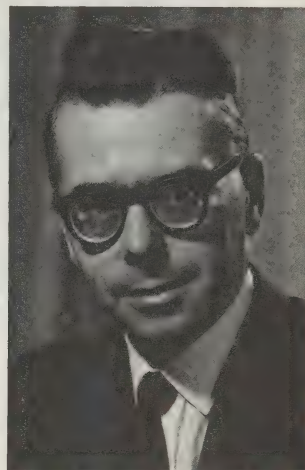
THEORY AND EVOLUTION OF AGRICULTURAL MARKET REGULATION IN CANADA

The specific objectives of a board must be attainable within the food system.

The effectiveness of a board is related to its ability to control the product in its market.

Marketing boards give producers the counter-vailing power to oppose big buyers. This leads to bargaining situations and inevitably to government and public interest and involvement.

*Geoffrey Hiscocks**



This article will first present a few definitions. Then the characteristics of the agriculture and food industry be discussed, especially those which have led to market regulation. Some of the implications of these characteristics will also be considered. From this basis, consideration can be given to some of the theoretical bases for agricultural market regulation. Then will follow a quick review of the historical development of market regulation in Canada up to the end of 1971. Finally some implications of the present evolutionary position, the characteristics of agriculture and the needs and problems of agricultural marketing will be presented.

What Kind of Market Regulation?

Market regulation is a very wide subject. It can cover any aspect of the marketing process that government wishes to regulate. General rules for the operation of "fair trading" such as weights and measures have been in existence for centuries. For agriculture, rules governing

many procedures in marketing, grades, grading, contracts, and arbitration are laid down in the regulations of the Canada Agricultural Products Standards Act, the Canada Grain Act, Feeds Act, Fertilizers Act, and others. These acts apply equally to all produce from all farms, but as long as all produce complies with the rules, there is no restriction of movement or control of the agreements between buyers and sellers to affect prices and volumes.

The market regulation which is the concern of this article involves the establishment of organizations (called marketing boards) which directly affect the flow of farm produce from the farmer to the consumer, the arrangements for that flow and the resultant prices. A marketing board can be defined as a compulsory horizontal marketing organization for primary or processed natural products operating under government delegated authority. The compulsory feature means that all farms producing a given product in a specified region are compelled by law to adhere to the regulations of a marketing plan. The horizontal aspect means that marketing boards control the output of all farms participating in the particular marketing scheme and that they aggregate the supply from all the farms up to a

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chosen or permitted level. Government authority through legislation is essential to achieve the required compulsion. The power of the boards utilising this authority is generally wide enough to affect the form, time and place of sales and directly or indirectly, the prices. It is clear that this is a powerful and far-reaching type of market organization and that society takes a very significant step when it gives these powers to one group in the economy.

What Are the Objectives of this Type of Market Regulation?

Farmers want these compulsory powers to organize all producers or sellers of a particular product because they claim that only through compulsory organization will all share the burdens required to get better prices for all. Thus from the producers' point of view the objectives are:

- (1) To maintain or increase the incomes of the producers of the particular product;
- (2) To stabilize income from the sale of that product; and
- (3) To standardize the terms of sale of that product.

Of these objectives, increasing income is by far the most important and it is usually expressed in terms of increasing the price per unit. Raising the price per unit is frequently tied very closely to stabilizing the price on a month-to-month or season-to-season basis. Both of these are also related to standardizing the terms of sale, often ensuring that all producers receive similar treatment regardless of location, volume delivered, or time of delivery. It is not agreed by all groups of producers that this technique is the best way to achieve these objectives.

From the buyers, processors, retailers and consumers position, there is also lack of agreement on compulsory marketing boards. A board can make life easier and simpler for buyers, processors and retailers, because it means having only one organization to deal with, instead of hundreds or even thousands of individual farmers. On the other hand, there is serious concern that the granting of these powers to one group – the producers – is restrictive and leads to higher prices, inefficiency in production, difficulties for producers and is not in the best interests of consumers.

However, a large number of marketing boards have been created in Canada. The various governments must have decided that there was strength and validity to the claims of producers. Thus the governments involved must have a belief that these powers are justified in relation to the problems facing the agricultural industry and are in accord with the desires of the consumers for more stable prices.

Some Important Characteristics of the Agriculture and Food Industry

What are the characteristics of agriculture that justify this type of government action? A review of some major features of the Canadian agriculture and food industry includes:

1. Crop production is characterized by great annual and seasonal variation in yields. Small changes in production bring disproportionately large changes in producer prices.
2. Most foods are price inelastic. Large changes in prices result in only small changes in consumption.
3. Rapid increases (and potential increases) continually occur in agricultural production through advances in research, technology and management.
4. Food consumption in Canada is increasing very slowly because the determinants of food consumption are the number of people, their previous food habits, and the level and distribution of their incomes.
5. There are a large number of farms, ranging widely in size, and with high proportion of farmers operating relatively small farms.
6. There are relatively few sellers of farm inputs and services and also a small number of buyers of farmers' output.
7. Farmers have a high level of technical and managerial ability resulting in increasingly efficient farms but it is not matched with the same level of ability in marketing.
8. Farmers are getting a decreasing share of the consumers' dollar because of increasing "built-in-maid-service" which the consumer is willing to buy with the food.
9. Because consumers do not want higher food prices but labor costs in food marketing are continually rising, processors and retailers keep constant downward pressure on farm product prices.
10. Marketing boards have been organised on a provincial basis but production in one province has an influence on marketing and prices in other provinces.
11. The Canadian domestic market is influenced by supplies and prices elsewhere in the world.
12. Prices are competitive in world markets, and protective import and aggressive export policies of other countries often confront Canadian exporters.

To reiterate these features in a simple fashion – farm production cannot be controlled like a factory – the supply varies and, in a freely operating situation, does not balance with demand at any one time. Nor can demand for many food items be stimulated like demand for other consumer items. Furthermore, much of the

production of farms is seasonal and has special storage and pricing requirements. Because of the biological nature of farm production, combined with price variability, cyclical production situations occur. As production areas are not close to consumption areas, good organization of transportation is important. The presence or absence of barriers to import and export trade is important. Superimposed on all this are continual technological advances in production, processing and handling and rising consumer incomes. Farmers want their share of this rising income, which in part at least is based on the improved productivity they so expertly generate by adopting new technology. Agriculture is not just concerned with producing raw food materials but with food processing, storage, transportation, wholesaling, retailing and consumption.

A Theoretical Basis for the Regulation of Agricultural Marketing

These characteristics of the agriculture and food industry are fundamental to the reasons for marketing boards and in establishing a theoretical basis for their operation. The elementary economic principles of demand, supply and price are based on the assumptions of many sellers, many buyers and perfect information between them. This situation theoretically enables an equilibrium point or price to be reached for any given supply such that supply matches demand and maximum profits for each firm are achieved.

However, in practice, problems arise. Not only is there a lack of information but there are only a few buyers. There is, in fact, a situation of imperfect competition, or more precisely oligopsony (few buyers) and monopsony (one buyer). Under a situation of oligopsony there is no equilibrium point for price in a given supply and demand situation. In theoretical terms, the outcome is indeterminate for price. Because the profit of the oligopsony or monopsony organization is not maximized by a particular price which equates supply with demand but by the influence the organization may have, its ability to set its own price or to increase its market share, there is no simple determination of price. However, the price paid to the large number of farmers can be lower than under perfect competition and also the volume taken could be lower. Faced with the situation of a few very large buyers and prices that do not seem to fit the total market picture (and often other conditions of sale, transport or grading), one theoretical solution is to strengthen the bargaining position of farmers.

Other features of agriculture reinforce the need to increase the farmer's bargaining position. With slow growth in total food consumption and relatively inelastic

demand at any one time, variability and seasonality of production cause disproportionate changes in price. A five percent change in supply can lead to a large change in price — as much as 50 percent is on record. Hence the desire of producers to stabilize prices. Many farmers are a fairly long distance from the major consumption centers, delivery points or processing plants. Differences arise in the price each producer receives and there is a desire to provide more equitable treatment to all producers of a given product.

On a theoretical basis, the individual farmer has no impact on prices and market events. Because of his small output, he is individually unable to influence prices through storage or control of the next stages in the market process. Thus the obvious solution is to join with his fellow producers to organize marketing and to control the products they sell. The theory behind this move is simple. With control of the product, influence can be brought to bear on the buyers. The oligopsony or monopsony would now be faced with a monopoly of farmers. Under these conditions, economic theory still only provides an indeterminate solution to most situations of supply, demand and price but at least with the farmers' bargaining power strengthened there are good chances to get higher prices.

Several conditions have to be fulfilled to bring this pressure to bear on the buyers. The first is that the control on the product must be absolute or near absolute. The second is that the controlled source of supply is the only readily available source of supply within the expected price range. The third is that influence exerted through control is not used to attempt to obtain objectives which in reality are unobtainable. Let's take a look at these three conditions carefully:

1. If virtually all the product being marketed from one area or group of farmers is not controlled, then the ability to influence price cannot be sustained because only a small percentage of the volume available can be sold to the few buyers under the controlled conditions. The control becomes undermined and the system will collapse. But price can be successfully influenced within a small area or just one plant.
2. If control is exerted on the production or marketings from one area or region of a province, production elsewhere in that province can undermine it. If control is exerted on all production in that province, production in other provinces can undermine this control as long as storage, handling and transportation from one point to another are not prohibitive. If, of course, only a local market is being served, outside supplies may have difficulty in undermining local control. If control is exerted

on all production in the country, production in other countries can undermine this control as long as storage, handling and transportation costs from one country to another are not prohibitive. In general, the actions in the market of an organized group of producers can be undermined by the production of other producers if the market conditions freely allow it.

3. With a commodity like food where total consumption is limited and where increases in production can occur rapidly, large price increases by farmers can seldom be passed on to consumers for long periods. If they are, sales volume will decline, either because of product substitution by processors or consumers or because other sources of supply of the same products, previously unattractively priced, now become attractive. Thus there are limitations in the nature of the food industry to how far counter-vailing power can be used.

Controls over producers can be exerted in a wide variety of ways depending on the product, the market arrangements and the type of marketing board. A board may simply negotiate an annual contract for the price with a processing plant involving all growers serving it. With a perishable product, outside competition will be nil. Sales of the processed product will have to compete with other plants and will result in a limit to farm prices. If fresh market sales are also involved, the board might operate a two-price system and allocate supplies between the two markets to maximize a pooled return according to the total volume of production each year. Farmers will receive higher average prices; all farmers will have a share of both markets and, as long as the processed product does not accumulate excess stocks, all could be well. But outside supplies at lower prices could undermine either the fresh or the processed product if producers and the processor in the marketing board area do not continue to improve their production efficiency. Finally, the board could attempt to balance supply with demand through the control of production. This can be done in a variety of ways usually involving some form of quota on delivery for each farmer. The heart of the problem then involves the method of allocation and operation of these quotas.

Once control is instituted, further problems arise. Supplies of the controlled commodity available from other sources are also subject to year-to-year price fluctuations. How much attention to pay to these "outside" prices is a problem. The need to encourage continuing increases in production efficiency including letting new producers obtain quotas is another problem. There is a danger of substitution of products by processors and consumers if prices are raised too high. A

completely monopolistic approach by producers, processors and distributors acting together has led to treatment by government as a public utility (e.g. fluid milk) and some loss of control by producers. Control of imports might also seem a useful asset to be associated with marketing boards. The extent to which to establish and maintain controls raises many fundamental economic, social, philosophical and political issues. From the economic point of view, the argument for control to give greater returns to producers is strong. At the same time, the value to consumers of reasonably priced food in good supply at all times compared with fluctuating prices over time and the value of an economy based on relatively free trade has to be considered.

Evolution of the Marketing Board Concept in Practice

The history of organized agricultural marketing is closely aligned with the history of farm organizations in general, particularly those designed to bring some kind of political pressure on governments. The early development of Canadian agriculture has seen a number of farmer movements created at a political level. One big incentive to this development was the opening of the Prairies through the completion of the C.P.R. and other railway lines, thus enabling produce to be shipped out in large volume. Even so, farmer organizations playing an active role in marketing were slow to develop. Around the beginning of the twentieth century farmers began to form co-operatives in various parts of Canada to market their produce and to provide better marketing facilities or lower costs than private companies.

Dissatisfaction about grain marketing among the Prairie pioneers led to the formation of grain growers' associations to exert pressure on the grain companies, but these organizations soon decided that co-operative marketing was the real solution. Province-wide co-operative elevator companies were established in each of the three Prairie Provinces by 1913. Two of these companies amalgamated to form United Grain Growers in 1917. In many agricultural areas, the co-operative movement expanded rapidly during this period and many small purchasing and marketing co-operatives were formed. However, many of these could not cope with the low prices between 1916 and 1924 and failed.

One example of this new co-operative farmer marketing was the Okanagan United Growers Co-operative, established in 1913. It was fairly strong and effective for a number of years. Its re-organization in 1923 created a large selling co-operative, supervising fruit sales, introducing cold storage and a modest advertising program. It began with 83 percent of the growers as members but, being voluntary, the participation fell to only 70

percent. The marketing of each crop became more difficult and unsatisfactory from the members' point of view, and interest in some compulsory marketing organization reached fruition with the B.C. Produce Marketing Act of 1927. The provincial legislation was largely concerned with producers in a local area but they were exporting outside of the province and Canada and the Supreme Court nullified the Act on the grounds that it interfered with interprovincial trade.

Meanwhile, the Western farmers, with their system of co-operative grain elevators and creameries, developed a keen interest in the pooling principle through which they could receive average annual prices for their produce rather than the market price on the delivery day. Pooling was attractive to grain producers and by 1925, three large grain pools handling about half the Prairie grain were organized. A number of other pools were organized during the 1920's following the pattern set by grains.

The depression produced very serious problems for many marketing co-operatives. Prices of agricultural products plummeted for over three years and eventually stabilized at extremely low levels. This led to failure for many of the weaker co-operatives and imperiled even strong ones. Thousands of farmers went bankrupt. The Federal Government sought a solution through compulsory marketing boards. In 1934 the first national legislation was passed, based largely on an organization originally developed in Australia but followed also in Britain and several other countries. The history of the Dominion Agricultural Marketing Board was brief and dramatic. Twenty-two marketing schemes were approved largely in local areas to deal with commodity problems affecting specific groups of producers in these areas. These schemes were scattered from one shore of Canada to the other. In June 1936, the Supreme Court declared the Act *ultra vires* and this was upheld by the Privy Council in 1937. This decision arose out of the constitutional division of powers between the federal and provincial governments. It probably also reflected a lack of general consensus at that time.

This entry into national marketing legislation was far too brief for Canadians to gain any lasting experience in this kind of compulsory producer marketing. It provided no real indication of the advantages or the problems, let alone the need to organize marketing on a national scale.

While the depression has shown that even large pooling co-operatives could not cope with such activities as stabilizing grain prices, co-operatives had demonstrated an ability to perform valuable functions for producers particularly related to storage, handling and processing.

Nevertheless, some problems needed a stronger and more powerful organization than the voluntary co-operative could provide. Thus two new trends were started after the demise of the Dominion Marketing Board. The first was the action by farmers to have the provinces pass legislation to establish marketing boards with compulsory powers concerned largely with intra-provincial trade. British Columbia, with its earlier experience in this field was poised with new legislation when the Federal National Products Marketing Act looked short-lived. Ontario and New Brunswick followed with powers to keep their boards which had originally been set up under Federal authority.

The second trend grew out of the many problems and concerns of Prairie grain growers. Federal Government guaranteed loans had already been required to tide the grain pools over the crisis. In due course, the Canadian Wheat Board was formed as a government appointed marketing board to operate price pools for grain and perform various marketing functions. It was the first compulsory Marketing Board operating across provincial boundaries in Canada, but it was (and still is) regional rather than completely national.

These two trends laid a pattern that affected the subsequent evolution for several decades. The second world war and its aftermath of food shortages also meant very little new activity concerning marketing boards from the outbreak of war in 1939 to the recovery of world food supplies in the early 1950's. Ontario, Saskatchewan, Manitoba and P.E.I. passed enabling legislation for marketing boards and a few more boards were formed locally. Wartime regulations, special administrative boards and post-war recovery affected much of agriculture's activities and prices.

The evolutionary process did not start again until the 1950's. Developments within the provinces started but not before the Federal Government had provided a missing ingredient. Provincial legislation could give farmers within a province powers to control the product in intra-provincial trade but movement outside the province was the constitutional responsibility of the Federal Government. In 1949 the Agricultural Products Marketing Act authorized the granting to provincial boards powers in interprovincial and export trade. With competition from other agricultural producers in many countries and in other provinces becoming severe in the post-war world, two more provinces introduced Marketing Board legislation for the first time (Alberta and Quebec) and four others re-wrote theirs. By 1956 only Newfoundland was without such a provision. Along with the legislation came growth in marketing boards. In 1955, there were 26 producer-controlled marketing

boards — all but one operating in a narrowly defined local area. The Federal Act was amended to grant permission to pool under two-price schemes by provincial boards.

At the same time as these agricultural institutions developed, there were other changes in the Canadian economy. The 1950's saw the rapid development of a new form of retail organization — the supermarket. By 1970 most food passed through these retail outlets, which are now organized into five very large chains, with extremely efficient wholesale systems and with an increasing tendency to integrate backward into processing and manufacturing. Another development closely allied with the growth of these chains has been the complete establishment of a national Canadian market. Improved and increased travel, and the growth of instant communication meant that events were known almost simultaneously from one side of the continent to the other. For farmers this meant that now no production group was isolated and thus could no longer operate solely within local areas.

The 1960's brought severe marketing and price problems, leading to rapid growth of marketing boards in several provinces. Internal development in Canadian agriculture, an increasingly difficult world agricultural situation, restricted export outlets and subsidized competition led more groups of producers to seek the use of compulsory marketing boards to protect their positions. At the end of 1971 there are just over 100 marketing boards¹ — up from 25 just 16 years earlier. Interest in regional and national marketing boards was growing rapidly. The constitutional position had been clarified on a number of issues (see Appendix) by various court decisions. Producers and provincial governments have come to recognize the serious limitations of a provincial approach. This was also clear from the theoretical discussion. Pressure for federal legislation to provide for national marketing structures began to build up. A specific proposal for such legislation was prepared by the Canadian Federation of Agriculture in 1963 but even so there was not sufficient wide-spread support for it.

The creation of the Canadian Dairy Commission to establish a comprehensive approach to milk production and marketing was the next step. Then the agreement to provide national legislation for egg marketing generated support for other commodities also. In 1970 Mr. Olson, the Federal Minister of Agriculture, laid before Parlia-

ment a draft Act to provide national enabling legislation. As the marketing problem in eggs and broilers worsened, the "Chicken and Egg War" indicated a further need to solve these problems on a national basis.

Implications of the Theory and the Evolutionary Steps

The theoretical background and the historical evolution of marketing boards in Canada have a number of implications for the future development and operation of boards. The extent to which producer-controlled marketing boards can achieve specific objectives depends on several key points. First, the specific objectives must be attainable within the food system. In other words, any increase in price must either come from other parts of the food system or from the consumer. The objectives will be unattainable if they are in direct conflict with demand and price characteristics of the product. For example, if a commodity is declining in consumption, no amount of counter-vailing bargaining power by producers will change the consumption trend. Different marketing techniques (new packaging or different processing) can help. With an inelastic commodity, the price can be raised but the volume sold will be lower. However, use of marketing boards as a means of adopting better marketing methods with lower costs can raise returns and ensure that the benefits accrue to farmers.

In general, the effectiveness of a particular board is related to its ability to control the product in its market. If the market is relatively self-contained, a local board can be effective. If the product is produced in several provinces, some form of united action among the producers in each province is required. If it is produced in almost every province, then a national organization is required. Imports of competing produce raise further problems of control and also of relative efficiency. In most cases, a marketing board should be able to compete with imports unless the imports are unduly low priced. If dumping practices or subsidized prices are discovered, special consideration is required.

In the case of exports, a marketing board cannot be certain that it will achieve its objectives because it has no control over the export market. Nevertheless, marketing boards can provide many practical advantages for large-scale exports, for market development and promotion, and for continuity of supplies. But unless it is an integral part of an overall domestic and export marketing plan, an "export only" marketing board has little advantage over a large Canadian company that makes a practice of maintaining export markets for Canadian products on a continuous basis.

¹This takes account of the amalgamation of the many industrial milk boards in Quebec. In 1969 before amalgamation there were 122 boards in Canada.

Perhaps the most significant implication, however, is that the provision of counter-vailing powers to producers does not ensure a clear-cut resolution of price, volume and income questions. Because it leads to a bargaining situation, the public and governments have a continuing interest and involvement. Each solution requires careful analysis of the short and long run interests of farmers, processors, retailers and consumers. These interests range from making a living from farming, making a profit from processing and retailing to minimum price, maximum quality and continuity of supply for the consumer. Thus we immediately become involved in the whole food system and the need to ensure that producer-controlled marketing boards have the maximum market orientation. In the end, the fulfillment of the farmer-oriented

objectives of raising and stabilizing price and income with equality of treatment depend on the food system and the consumer. The successful operation of producer-controlled marketing boards on a continuing basis in the future require not just a price raising operation but the adoption of an active marketing role by the boards. In this role they must participate in all phases of marketing within the food system - not with a controlling influence but through involvement. With this approach there can be a greater assurance that each part of the food system obtains returns on its resources equal to returns obtainable elsewhere in the economy and that special benefits do not accrue to one special interest group.

APPENDIX 1

COURT DECISIONS CLARIFYING AGRICULTURAL MARKETING LEGISLATION

1. The Federal Government has not the authority to regulate the intra-provincial movement of products but provinces have such authority.
2. Provinces have not the authority to regulate the interprovincial movement of products but the Federal Government can extend interprovincial powers to provincial boards.
3. Provinces can charge license fees under a marketing scheme to defray costs of regulating a product and to increase the general funds of the province (direct taxation) but cannot charge a levy for price adjustment purposes (indirect taxation).
4. A system of pooling of returns under a provincial marketing scheme was held to be valid.
5. The regulation of a product delivered within a province was considered to be within the competence of provincial legislation even though following processing most of the by-products moved into interprovincial trade.
6. A provincial plan which aims at restricting or limiting the free flow of trade between provinces constitutes an invasion of the exclusive legislative authority of the Parliament of Canada over the matter of the regulation of trade and commerce (Manitoba case 1971).

A REPORT ON THE 16th SESSION OF THE FAO CONFERENCE



Frank Shefrin

**Agricultural Adjustment--
Green Revolution -
Agrarian Reform -
Protein Shortages -**

Equitable redistribution of land is an urgent priority in much of the world for the best use of human resources, if social disruption, political upheaval and economic chaos are to be averted says Dr. Lleras Restrepo, a former President of Columbia. Dr. Lleras was presenting the final report of FAO's Special Committee on Agrarian Reform during the 16th Session of the FAO Conference in Rome. In most developing countries, he said, agrarian reform is a "necessary complement" to the Green Revolution and one cannot be accomplished without the other.

This report states "the change in tenure structure must be affected as quickly as possible." It adds that "agrarian reform implies, first and foremost, a political decision. The changing of land tenure structure...promotes not only a redistribution of an income swelled by technical progress but also a fundamental alteration in the position of the existing social strata and hence, a redistribution of power."

In commenting on the disparity of growth between different regions of the world and between urban and rural areas, Dr. Lleras said "agrarian reform is an indispensable step toward alleviating this growing imbalance."

At the same Conference, **Mr. Anthony Kershaw of the United Kingdom**, Parliamentary Under-Secretary at the Foreign and Commonwealth Office, stated that Britain's entry into the European Economic Community should

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benefit developing countries and offer new opportunities in trade and aid for its Commonwealth partners.

The **Tanzanian Minister of Agriculture and Cooperatives, Mr. D.N.M. Bryceson** expressed his concerns when he said that his country continued to be dogged by fluctuating and generally weaker prices for its own produce while production costs increased because of rising prices for essential inputs. He had little faith in commodity agreements as a solution.

"Even in the case of coffee which is often held up as the prime example of the wonderful thing a commodity agreement can be, I have serious reservations," said Mr. Bryceson. "The agreement has proved to be a bargain maker for the US housewife and I suppose for housewives in other developed countries. It is difficult to see, if this is so, how at the same time the coffee producing countries have benefited." He foresaw the role of FAO as a "World Ministry of Agriculture," guiding, coordinating and advising.

The FAO Conference in Rome is a Biennial Event

Every second year during the month of November, the FAO Conference convenes in Rome at FAO Headquarters. During this meeting, Ministers of Agriculture have an opportunity to express the concerns and objectives of their countries. In 1971, about 1000 delegates from 125 countries met in Rome to review the world agricultural situation, the problems, the objectives, and the progress. Of the 125 countries, nearly 100 can be considered as developing. Of this number, 61 have become independent since 1945 - 38 of these newly independent countries are located in Africa.

World's Economic and Social Problems When Conference Met.

The world's population was estimated at 3.6 billion, with about 2.5 billion of this total living in nearly 100 developing countries. Because of the predominance of agriculture in most of the less developed economies, and because it tends to be a subsistence agriculture, the farm sector has a key role in economic development, especially in the initial stages.

The contrast between the rich and poor countries of the world is nowhere more striking than in the domain of food products. In the poor countries where the large majority of work force is in agriculture, they barely keep pace with the food needs of their rapidly expanding populations. For many developing countries, foodstuffs are one of the largest import items, and a good part of these imports were in effect, either grants or supplied under concessional terms.

Agriculture's G.D.P. (Gross Domestic Product) varies widely among the developing countries, according to UN sources, from less than 10 percent in countries that have major mining or manufacturing sectors (such as Chile, Libyan Arab Republic and Venezuela) to about 60 percent in countries in which subsistence life still bulks large (such as Ethiopia, Uganda and Tanzania). These figures compare with 13 percent in Italy, 6 percent in Canada, 5 percent in West Germany and a mere 3 percent in the United States.

The volume and tenacity of the employment problem is more serious in the developing countries than in advanced countries. This reflects the large proportion of the labour force in agriculture.

To raise agricultural output it is necessary to increase the yield per acre, and yield per animal. Greater yields require technical improvements in the methods of cultivation and increased efficiency of workers. These requirements may be accomplished through technical education, new tools and equipment and land reform. And to increase the area of arable land, land improvements and reclamation are necessary. And to accomplish all this requires planning. Yet, agricultural planning is particularly difficult, not only because the factors determining the demand are largely beyond the control of agriculture, but also because supply is conditioned by the biological and seasonal nature of agriculture, and farmers are widely scattered, usually in small units and often without much education.

Trends in Production

The Director-General of the FAO reported to the

Conference on the agricultural situation and indicated that progress had been made. He pointed out that world agricultural production increased about four percent in 1971, mainly because of a sharp rise after two years of stagnation in Western Europe and North America. This growth compares with about a two percent gain in 1970 and none in 1969.

For all developing countries, the Director-General went on to say that, farm output is expected to exceed the 1970 level by perhaps two to three percent. This contrasts with an estimated seven to eight percent gain for the developed market economy countries. For the centrally planned countries of Eastern Europe and the USSR, a gain of one to two percent is expected compared with a six percent expansion in 1970. The growth in output for the developing regions as a whole would allow for no increase in per capita terms in 1971.

Dr. Ojala, Assistant Director-General in charge of the FAO Economic and Social Affairs Department, discussed some aspects of the Green Revolution, the name "commonly and perhaps prematurely" given to recent technological advances in cereal cultivation in developing countries. He cited the significant production gains between 1967 and 1970 for wheat and rice in India, Pakistan, the Philippines and Ceylon. He added,

"the fabric of this progress in the developing world as a whole remains fragile, and its base narrow, both geographically and in terms of commodities ... In 1971, India again had a good year, but there were setbacks in Ceylon, Pakistan and the Philippines, and the latter country has again had to import rice, after being self-sufficient since 1967. For the first time in the short history of the high-yielding varieties programme, an important reason for the setback at the national level, in the Philippines, was a major outbreak of disease among the new rice varieties, an eventuality that had been feared from the start."

In describing the sudden rise in output in 1971 in developed market economy countries as a whole, Dr. Ojala noted that the stationary overall level of their production between 1968 and 1970 was mainly the result of measures to restrict production. This followed renewed accumulations of surpluses of cereals and dairy products. The quick recovery of production of these developed countries in 1971 showed the strength of the basic forces that tended to expand agricultural production in these countries even as their agricultural population was rapidly diminishing.

Over the longer run, the FAO Secretariat reported that the 1970-80 FAO commodity projections suggested that world agricultural trade was not likely to grow very



The 16th FAO Conference in session. (FAO photo)

rapidly if the difficulties facing agriculture continued to be aggravated by current protectionist policies and if no action was taken to reverse trends. In the absence of these measures, the increases in foreign exchange earnings accruing to the developing countries from agricultural exports would at best be modest. For most commodities, the longer term outlook pointed to excessive productive capacity in relation to market demand.

Proposals

Against this background, what did the 125 leaders¹ of the delegation have to say at the Conference? What were the problems they were concerned about? What proposals did they make?

- There was a general feeling that the closely linked problem of production and trade could best be solved in an international framework under which countries

were better able to take account of the repercussions of their production decisions on each other, to plan their production and trade policies within a larger time perspective, and share the burden of adjustment more equitably.

- The Conference agreed that FAO had an important role to play in the identification of international commodity trade problems and in the consideration of possible measures for dealing with these problems. It also generally agreed that, while more general measures should be explored, the main approach to commodity problems in FAO should continue on a commodity by commodity basis.
- In taking note of the reduction and disappearances of surplus stocks of some agricultural products in developed countries a number of delegations pointed out the paradox whereby many developed countries had cut down their output, while the majority of developing countries had difficulty in sufficiently accelerating agricultural production. Some dele-

¹The Canadian delegation was headed by the Hon. Mr. Olson, Minister of Agriculture.



Latin America — Catching anchoveta off the coast of Peru. (FAO photo)

gations stressed the problems their government faced in trying to stabilize production, because of the heavy costs involved and the complicated social and economic considerations which had to be taken into account.

- In considering future trends in production, the Conference noted that the specific UN Second Development Decade targets for agriculture were for an average growth rate of not less than four percent a year in agricultural production in developing countries, as well as, improvements in such areas as international trade, employment and nutrition. The Conference agreed that there were reasonable prospects of achieving these goals, provided that, at least, three prerequisites were met:
 - (a) acceptance by the developing countries that the prime responsibility lay with them;
 - (b) provision of adequate aid from developed countries;
 - (c) creation of conditions which allowed developing countries to increase their exports dynamically.

Ministers' Views

Limitations of space permits only a brief reference to some of the statements made by heads of delegations. The choice is a random one meant to illustrate, in the language of the delegates, what the concerns were and what action was wanted.

The Thailand Minister of Agriculture, Mr. M.R. Chakratong Tongyai, said that his country's annual growth rate in gross national product has averaged 10.5 percent over the past few years in spite of a drop in the share of the agricultural sector. He said, "The decline was mainly due to changes in the world situation. Rice, which is our major foreign exchange earner, was affected by the 'Green Revolution'. Countries which used to buy rice from Thailand are now self-sufficient or on the way to self-sufficiency. Moreover, additional difficulties have arisen due to competitive concessional rice exports by richer developed countries who can afford to subsidize their international outlets."

Secretary for Agriculture, Fisheries and Forests in Fiji, Berenado Vuniboro, said that two principal aims under its Five-Year Development Plan are to raise farm income and to increase rural employment. Seventy percent of Fiji's half million people live on the land. International market considerations severely limit further expansion of Fiji's main cash crops, sugar and copra, so the Pacific nation - made up of 300 islands spread over 7,000 square miles - must diversify its agriculture "if she is to achieve social and economic development in the years ahead," he said.

"The measure of success of our agricultural diversification policy," said Malaysia's Minister of Agriculture, Ghazali Jawi, "is that the country could weather the drastic drop in rubber prices over the years." As it de-emphasizes rubber production, Malaysia is moving heavily into timber production with the aim of exporting more processed timber as well as a greater variety of wood species. It is also extending its fishing activities farther out to sea as the in-shore fishing banks are exhausted. As a result of high-yielding varieties of rice Malaysia is now almost 90 percent self-sufficient in rice. Therefore, said Mr. Jawi, the rice plan "is now being altered from one of self-sufficiency to one of enhancing the incomes and welfare of paddy farmers through more intensive production." He also went on to say that the process by which governments attempts to guide and manage their agricultural economies instead of leaving farming and the people who depend upon it wholly to the mercies of the weather and an entirely free market, is at best problematic for rich nations which can afford to make adjustments. But for nations lacking industrial,

mineral or petroleum sectors to pay the bills for modernizing agriculture, and where this agriculture may be in good part of a subsistence nature, including shifting and nomadic practices, agricultural planning and adjustment practices are extremely difficult.

Mr. François Nguema-Ndong, Minister of Agriculture, Husbandry and Rural Economy in Gabon, said it was of great importance that in addition to efforts being made to increase the volume of primary products in the Third World, efforts should be made to reach, before the third session of the United Nations Conference for Trade and Development, an agreement whose main objective would be to fix equitable prices for these products in relationship to the expected economic situation.

The Minister also spoke on the development situation in his country. "Agriculture in the Gabon is very little developed. The government is trying to limit the drift of population from rural areas." Some steps taken had already given results. The Second Five-Year Plan was concerned with increasing cultivated land and ameliorating the quality of produce. Economic growth of the Gabon was not equal in all sectors. This disequilibrium was a threat to the whole population's standards of living. To obtain concrete results, the Gabon government would concentrate its efforts in turn over five-year periods in each region.

The **Argentine Minister of Agriculture Antonio Americo Di Rocco** said that in his government's opinion, little could be done to improve the world agriculture and trade situation unless urgent steps were taken to combat "protectionism and economic aggression." Given such circumstances, along with constantly falling prices for primary agricultural products, for most developing countries, the promises of international cooperation and technical assistance had "a flavour of irony." Although Argentina recognized that some countries had made "meritorious efforts" to improve the international situation, it had not been enough to offset the "repeated aggressions caused by policies of subsidies to agricultural production achieved at 'highest cost' and through typical manoeuvres of 'dumping' in the world market."

Mr. Abdelghani Akbi of Algeria, said that despite "sweet words spoken and which continue to be spoken in all international gatherings, the trade situation continues to be unfavourable for developing countries. This situation which was already unfair has been aggravated by recent monetary measures taken last summer." For the Algerian representative, "that is the logical outcome of the selfish, shortsighted view of developed countries which prefer to suffocate under the weight of their prosperity and riches rather than to open themselves to the world of the poor."



Middle East — Repairing an irrigation dam near Yengi Kand, Iran. (FAO photo)

The speaker said that, "like many, if not all developing countries, Algeria inherited a disjointed economy particularly in the agricultural domain which fulfills neither the essential needs of its population nor its national development, but is completely orientated to satisfying the needs of the colonials."

To rectify these distortions, the Algerian government had undertaken special programmes, planned the economy and proceeded towards agrarian reform. Distribution of land in the framework of what is a real agrarian revolution was carried out on the principle that "the land belongs to those who work it," with preference given to those who had liberated it - in other words veterans of the battle for national liberation.

Concentrating his presentation on agrarian reform, the **Chilean Assistant Director of Agricultural Planning, Luis Riffo**, said that the Chilean government of Dr. Salvador Allende had so far expropriated 1,328 estates. This almost equalled the total number expropriated during the six years in office of the previous Chilean govern-



Africa — Harvesting kidney beans at Bouaké, Ivory Coast. (FAO photo)

ment. The newly expropriated estates covered an area of 2,400,000 hectares and a rural population of 16,000 families. The expropriated estates area was equal to about 26,000 individual family units, he said. During 1972 the government intended to complete the land redistribution phase of Chile's agrarian reform with the expropriation of all those estates large enough to be considered "latifundia." Putting the expropriated land under "social controls," he said, "will make possible efficient agricultural planning and accelerate production."

Despite its own best efforts, however, Chile and the other nations of the Third World would find it difficult, if not impossible, to achieve their social and economic aims as long as the international situation "is characterized by the exploitation of our natural resources by some developed countries." Mr. Riffo said that,

"the aid that comes from the developed nations is many times surpassed by the value of the resources these same countries take out. In Latin America, to cite an example, between 1960 and 1967 more than

\$14,000 million were so extracted and the interest on previous debts was greater than the total of new loans."

Commenting on the natural catastrophes which had afflicted Chile over the past few years, the delegate said "these will slow, but not stop, the Chilean's people march toward progress." He particularly thanked the joint UN/FAO World Food Programme for its "most valuable aid" in mitigating the effects of these disasters.

Minister of Agriculture Enrique Valdes Angulo of Peru said that since the Peruvian Revolution of three years ago his country has chosen a development path "substantially different from either capitalism or communism." At the heart of the profound changes Peru was undergoing today, he added, was agrarian reform. He said,

"I am very pleased to report that extensive and densely populated sections of the country have now broken free of the latifundio-minifundio (giant and minute holdings) cycle through construction of a new agrarian structure."



Asia — Developing irrigation on five million acres, Rajasthan, India. (FAO photo).

For the period 1971-75, Peru foresaw an annual agricultural growth of 4.2 percent and an overall economic growth of 7.5 percent. Major irrigation works were bringing semi-arid areas under cultivation and colonization programmes were underway in the tropical regions.

Joao Baptista Pinheiro, Head of the Brazilian delegation, said his country was particularly concerned with the fact that, while all countries had approved the well-planned strategy for the Second Development Decade, a revival of protectionism was taking place. "Decisions on monetary policy are adopted without considering the interests of developing countries, and new, strong isolationist trends are threatening international cooperation," he said.

The situation, according to the Brazilian spokesman, placed greater responsibilities on FAO "as one of the major agencies participating in the tasks of the Second Development Decade." But Brazil feared that FAO, in attempting "no less than 96 sub-programmes" on a small budget was in danger of dissipating its resources. The

Organization should rather give priority to (1) assisting countries with agricultural planning and (2) helping obtain access to the markets of the industrialized countries.

Turning to environment, he said it was understandable that industrialized countries were giving high priority to pollution control, but they should not expect developing countries to be concerned to the same degree. He said that,

"to reduce the rate of industrialization in developing countries for the sake of avoiding environmental pollution, means to condemn these countries to the passive role of ecological preservation areas. Their economy would be kept on a purely agricultural basis and they would be deprived of most benefits of our civilization, which depend directly on industrial development... We do not mean that the problem of environment pollution should be dealt with only by the industrialized nations... The Brazilian delegate called for a system of sharing anti-pollution costs internationally. Otherwise, he said, the cost of pollution controls for young industries in the developing

countries could price their products out of the market."

Calling attention to "the serious danger faced by the developing world due to the so-called protein deficit" he strongly supported a United Nations proposal for "the establishment of an inter-governmental committee of the highest level to consider the problem of the improvement of nutrition standards in the developing countries."

Dr. Imre Dimeny, Minister of Agriculture and Food in Hungary, said that foreign trade relations were important factors in promoting economic prosperity. Hungary considered the improvement of trade relations one of FAO's most important tasks. Dr. Dimeny said,

"Hungary is willing to support and apply the system of commodity agreements. I should like to mention here that Hungary, starting in 1972, wishes to introduce general preferences in the trade with developing countries."

From time to time, participants in the Conference departed from their "script" and livened up proceedings considerably. **Dr. N.E. Borlaug**, recipient of the 1970 Nobel Peace Prize for his contribution to the Green Revolution in his McDougall Memorial Lecture to the FAO Conference, denounced "hysterical environmentalists" for attempting to block the use of agricultural chemicals, including pesticides such as DDT and fertilizers vital to adequate food production. He said the continued success of the Green Revolution will hinge upon whether agriculture will be permitted to use agricultural chemicals. He declared that,

"if agriculture is denied their use because of unwise legislation that is now being promoted by a powerful group of hysterical lobbyists who are provoking fear by predicting doom for the world through chemical poisoning, then the world will be doomed not by chemical poisoning but from starvation."

Mr. Mansholt of the EEC in his address to the Conference took exception to Dr. Borlaug's statement. Mr. Mansholt cited dangers in the accumulation of DDT on the planet. He said,

"Ten years' use of DDT means one kilogram per man in the world, and it stays in the world; it is in the soil, the plants, the seas, the plankton, the fish, the man. I am one of those 'hysterical environmentalists' Dr. Borlaug talked about - I am very concerned."

Mr. Mansholt called upon FAO and other organizations to launch a thorough investigation into the effects of pesticides, saying that no one knows what continued use of agricultural chemicals may mean for mankind.

Although the FAO Conference are relatively free of politics except for the politics of agriculture, from time to time politically oriented speeches erupt. These occurred when the seating of China in the FAO was discussed and when colonial questions came up. From time to time, political references were made to a given country.

Dr. Pelegrin Torras de la Luz, Vice-President of Cuba's National FAO Committee, said his country intended to increase its agricultural production considerably by 1975. Sugar production would be increased according to Cuba's economic necessities, while harvesting would be mechanized by some 40 percent. Cuba also intended to satisfy domestic demand for meat and vegetables, increase rice production, restore tobacco production to previous levels, increase milk production two to three times, maintain egg production at its present level of 170 per capita per year while raising substantially pork and poultry production.

The Cuban delegate preceded his review of Cuba's agricultural development plans with an attack on the policies of the United States of America, which he described as the "the strongest imperialistic power." He attacked the U.S. imposition of a 10 percent surcharge on imports and the U.S. intention to reduce its "badly named" foreign aid program as violations in "letter and spirit" of the United Nations resolution on the Second Development Decade. He accused the U.S. of "economic aggression" both by its intent to raise its own agricultural exports by one-third, obviously at the expense of the developing countries, and its refusal to allow the Cuban delegation to participate in a recent international sugar meeting held in New Orleans.

Dr. Torras de la Luz also took sharp issue with the Cuban figures given in FAO's "Agricultural Commodity Projections, 1970-80." He said Cuba would surpass the FAO projections in almost every commodity.

Exercising the right of reply, **Lowell C. Kilday of the U.S. State Department**, said the Cuban statement was full of "mistruths, distortions and gross exaggerations" and that the U.S. would not reply in kind to "political diatribe." The FAO Conference, he said, was not the appropriate forum for political debate and name-calling but was reserved for "serious purpose." "We suspect that this kind of political attack in a technical body is intended to divert attention from the technical matters which the Cuban delegation, for very good reasons, prefers not to discuss," Mr. Kilday said. He expressed the belief, however, that other delegations preferred to stick to the subject of food and agriculture and keep political attack out of the discussion.

The Cuban delegate, **Dr. Pelegrain Torras de la Luz**, in rebuttal, said he did not intend to engage in politics with the United States delegation but asserted that "we have documentation to prove each and every one of the statements we made."

Mr. Michel Cointat, the French Minister of Agriculture, praised FAO activities, but said that "the most important goal was still to be achieved - bringing about true cooperation between governments."

The French Minister said he was convinced that:

"Only a regional, then a general consultation toward an efficient, progressive world organization of agricultural markets, commodity by commodity, could lead to a better adjustment between supply and demand, namely in favour of people in the developing areas, and a fairer reward to farmers.

My government is ready to resume the discussion, first within the EEC, then with all interested nations, for agreements - commodity by commodity - that should be fair to all parties concerned."

Mr. Cointat said that the EEC was a good example of how such a system could work, since it had "helped the economic expansion of its member countries, while at the same time increasing its imports from developing nations faster than its exports." Such a system could not become operative in a day. If in the coming years reference prices could be established for major commodities and a few general rules for stocking drawn up, a great step forward would have been accomplished. In establishing such a system FAO would have a leading role to play. FAO could help governments form an opinion on production and trade perspectives and advise governments on how to carry out the necessary reforms.

Mr. Sicco L. Mansholt, Vice President of the Commission of the European Economic Community advocated an international strategy for agricultural production and marketing. He said that the Community is willing "to commit ourselves on support to farmers and on price policies... and accept binding rules which mean agricultural adjustment." But he added that the adjustment must begin with political decisions in individual countries. Community agreements can work, he said, only if they lead to "farmers getting a better income through better specialization." As an example, he said European farmers might perhaps concentrate on producing more protein in the form of meat products instead of such commodities as sugar. Farmers' production in one region should be "adjusted" to what farmers are producing in other areas.

Mr. Mansholt said there may be some who fear the expanded EEC may be no more than "a new rich man's

club which does not take into account the real needs" of the world. But, he added, "I can assure you that this Community wishes to be a positive factor in expanding world trade; it wishes to take a positive attitude in helping those who suffer in this world to improve their situation."

Mr. Olson, the Canadian Minister of Agriculture, expressed concern over the trend to protectionism and the resurgence of the "beggar thy neighbor" policy. He said:

"... there is today no example of a government being prepared to rely exclusively on prices in order to assure a balanced market for all products which are of importance to farm incomes. The general pursuit of agricultural support policies, especially by the industrialized countries, has tended to insulate their national markets (including those of centrally planned economies) from price movements on world markets. "Domestic farm policies have generated price guarantee levels well above world trading prices, in varying degrees, in nearly all industrial countries. As a consequence of such policies and technological change, production in developed countries has risen rapidly, resulting in high surpluses and a rapid build-up of further surpluses.

"These widespread structural difficulties and surpluses lead to the growing practice of subsidizing exports. To this must be added market restrictions in the form of tariffs, quotas or levies, applied as a consequence of increases in domestic output resulting from domestic support programs...

"I must frankly say that for a country like Canada where agriculture is heavily dependent on exports we are concerned with the present trend in price supports, export and import restrictions. Since countries have been able to evolve sophisticated techniques of supporting agriculture, they should be able to formulate domestic policies to reduce the impact of such national policies on international trade. While all countries have this responsibility, the onus rests on the large industrialized countries and economic groupings."

In reviewing FAO's current program and how it is approaching "the struggle ahead," **Dr. Boerma**, the Director-General of the FAO, said the most serious overall problem facing world agriculture was the persistence - and to some extent, worsening - of certain irrational and inequitable policies and patterns in world agricultural production and trade. These distorted the use of agricultural resources and slowed down world economic development. He also stressed that,

"There are vast regions which are not properly cultivated, where most people are badly fed and where

large rural areas are filled with millions of poverty-stricken and unemployed human beings. At the same time, there are other parts of the world living in a state of crisis because of overabundant agricultural production."

Much of the imbalance was due to - and certainly aggravated by - competitive and even "aggressive" national policies. If, as was feared, a continuation of these policies led to trade wars, the developing countries would come off worst. He emphasized "that the manner in which the developed countries solve their agricultural adjustment problems will have a profound bearing on the way in which such problems are solved on a worldwide basis."

It was essential to remember what the present imbalance meant in terms of conditions of human life, said Dr. Boerma. The Commodity Projections showed that in 1980, even after a 39 percent rise in agricultural output, 42 developing countries comprising about 1,400 million people would still have average calorie intakes below estimated requirements. He stressed that,

"The absolute number of people short of food may be much the same as today. This is the most distressing measurement of all."

He, therefore, called for "more concerted and vigorous action" to bring about international adjustment in agriculture and proposed that "agricultural adjustment" should be a major theme of the FAO Conference in 1973. He said he believed that the Green Revolution retained all its original promises. Its progress, which had so far been along the lines foreseen by FAO and others, had added weightily to the world's food supplies, particularly in the Far East. He also pointed out that,

"... as some of these so-called 'second generation' problems already make clear, it does not yet have enough of the general economic and social thrust behind it which we have all along said would be necessary and, without which, it will fail in its broader objectives for bettering standards of life in the developing countries."

Dr. Boerma said that FAO was intensifying its efforts in its "Areas of Concentration" strategy. These included mobilization of human resources for rural development; the protein deficiency problem; war on waste; promotion of increased yields; earning and saving foreign exchange in developing countries. FAO's most important new activity in the field of human resources was in connection with agrarian reform.

Consensus--Recommendations--Resolutions

After a week of statements by the Heads of Delegations, by the Director-General and by observers from some of

the major international agencies, the Conference got down to the "nitty-gritty" items of the agenda bearing in mind the views and admonitions spelled out by the Heads of Delegations. After three weeks of discussions, deliberations and caucussing, the Conference approved, recommended and proposed a large number of activities ranging from policies to administration, finance and constitutional matters.

International Agricultural Adjustment

The governing body directed the secretariat to prepare material for the 1973 biennial Conference for a major debate on international agricultural adjustment in order to rationalize both production and trade in agricultural commodities.

Eric Ojala, Assistant Director-General in charge of FAO's Economic and Social Department, described this international agriculture adjustment approach in the following way during the Conference.

"The recent years' developments make one wonder whether it might not be possible to find ways of bringing about changes in the level and pattern of national and world output that are less wasteful and more conducive to harmonious international economic relations and to world development than the unilaterally determined shifts and changes until now. What seems to be needed is a broadly accepted international framework for agricultural adjustments, a framework which takes account of the impact of national agricultural policies and trends in other countries, which provides for a more equitable sharing of the burden of adjustment as between importers and exporters, and between poor and rich countries, and which looks further ahead than the nearest short-term change in the surplus situation. Such a framework will have to be formulated and negotiated if the benefits of agricultural science and technology are to be widely and equitably shared among the peoples of the world. We fully realize the complexity of the problem...but we also see the increasingly urgent need for such an international framework emerging from the evolving world agricultural situation."

It was recognized at the Conference that agricultural adjustment entailed a wide range of economic and social problems which could not be ignored. It was agreed that the concept of agricultural adjustment was broader than trade, although trade issues would occupy an important part of the work on adjustment. Delegates repeatedly drew attention to the need to give developing countries greater market access, even though this alone would not solve all trade problems. It was pointed out that improved access implied a gradual reduction in the high levels of agricultural protection. It should be noted that

several delegations also pointed out the long-term nature of adjustment problems, and stressed that any adaptation of the agricultural sectors of high income countries, which might be needed to permit a substantial increase in their agricultural imports from developing countries encountered difficult social, political, technical and economic constraints.

Food Aid

The Conference approved a resolution calling for a target of \$340 million for voluntary pledges² to the World Food Program for 1973 and 1974--\$40 million more than the target for 1971 and 1972.

Delegates from the developing countries cited concrete achievements brought about in projects supported by food aid. They called for increased resources to carry on both existing projects and others which could not be undertaken by WFP due to a shortage of its resources. Many of them complained that not enough high-protein foods were available in WFP's "basket." Much needed milk, for example, was being fed to animals in Europe while WFP was unable to provide feeding for vulnerable groups, especially children. It was also stressed that the role of WFP was as a development agency and not as a surplus disposal agency. They called for planned production of surpluses to ensure adequate resources for the Program. At the same time, the major donors expressed their strong support for the Program.

Agrarian Reform

During the Conference discussion, many delegates stressed the importance of agrarian reform as a prerequisite for economic development and the urgency to carry it out where outmoded agrarian structures existed. The Conference emphasized that any decision concerning land reform and the strategy ultimately adopted by each individual country was a matter solely for the government concerned. However, it also agreed that FAO had an important role to play in assisting the

process of agrarian reform. The Conference recommended that the Committee on Agriculture appointed by the FAO Council, made up of government delegates should give adequate attention particularly to those rural development activities bearing on the reform of agrarian structures.

The Protein Problem

The growing concern over the shortage of protein has led to intensified activities at the United Nations, the FAO, WHO and other concerned international agencies in the field of expanding protein availability. Both the UN and the FAO passed resolutions calling for much greater efforts by these agencies as well as by the member countries in expanding protein supplies. Canada is one of the most active countries in this field of endeavor and has continuously stressed the importance of action on many fronts. The FAO itself has, as one of its constitutional responsibilities, the raising of the levels of nutrition of the population of the world.

To improve the present situation without delay, it was stressed that immediate action was required on the part of governments to initiate and implement special programmes directed at improving the protein/calorie nutrition of vulnerable groups. It was necessary to prepare, on a commercial basis from locally available raw materials, foods specially formulated so that energy, protein, minerals and vitamins were concentrated, says the Conference Recommendation. This might require assistance from UNDP (United Nations Development Program), UNICEF (United Nations Children's Fund), IBRD (International Bank for Reconstruction and Development) and WFP (World Food Program).

In a recommendation to the FAO Council, the Conference pointed out that "the prime responsibility to solve the malnutrition problem rests with the government of the country suffering from malnutrition, and should be expressed in the formulation of a national policy as part of the planned development." It also said that "the long-term solution to protein/calorie malnutrition will be found in the increase in purchasing power of the population affected, supported by effective programmes for nutrition education."

Accordingly, the Conference proposed the creation by the Council of a permanent body of seven of its members to evaluate the impact of FAO activities concerning the protein problem and to offer recommendations on the subject. The Council chose seven, each member representing an FAO region. Canada is a member of this group.

²The United Nations Organization and the Food and Agriculture Organization held their fifth biennial World Food Program Pledging Conference on January 31, 1972. Forty-five countries announced their pledges. The total reached was \$266 million. Although short of the target, it was the largest amount pledged at a Conference since the WFP was set up. It is anticipated the additional pledges will be made at a later date. The Canadian pledge for 1973 and 1974 is US\$34 million, of which 22% is in cash. This is \$4 million higher than the pledge made by Canada for the years 1971 and 1972. In announcing the Canadian pledge, the Hon. Mr. Olson, Minister of Agriculture, stated that "As in past years, Canada will continue to provide to the Program a wide range of food items that will assure that the calorie-protein relationship of our contribution will, if anything, be improved."

Research

The Conference was informed that the FAO, UNDP and IBRD co-sponsored a Consultative Group on International Agricultural Research. Canada is one of the countries that is a member of this group. The purpose is to identify major gaps and problems in existing agricultural research being conducted for or on behalf of the developing countries, on which a strong concentration of resources might result in a significant breakthrough with important consequences for more rapid development of the agricultural sector.

Human Environment

The Director-General reported to the Conference that he had established an Interdepartmental Working Group on National Resources and the Human Environment to ensure effective coordination of FAO's activities in this area. This group has cooperated closely with the Secretariat responsible for the preparation of the UN Conference on Human Environment to be held at Stockholm in June 1972. The Conference stressed the importance of the conservation of natural resources. Attention was also called to the waste disposal and pollution problems associated with agro-industries. It was also pointed out that most of the actions for the protection of the human environment should be taken at national and regional levels.

The Budget

The 16th biennial Conference of FAO approved a regular program budget of \$86 million for the two years beginning January 1, 1972. That represents an increase of 19.1 percent over the two-year period 1970-71. The greatest part of the increase—17.5 percent—is for higher operational costs due to inflation in the past two years. The remaining 1.6 percent is for expansion of FAO's activities.

Many developing countries expressed concern that agricultural development would suffer as a result of this very small expansion of FAO's program of projects.

The regular program does not include the extra budgetary funds that are made available to FAO from such sources as the United Nations Development Program (UNDP) and national trust funds. These resources are expected to amount to about \$240 million in the next two years and will augment the regular budget.

Of the 125 nations in FAO, seven pay 70 percent of the FAO regular program budget: the United States 31.52 percent, the Federal Republic of Germany 8.52 percent,

France 7.51, the United Kingdom 7.39, Japan 6.76, Italy 4.43 and Canada 3.86. The rest pay between 0.04 percent and about two percent, and most of these are developing countries.

Framework for Programming

A Medium Term Plan was approved, providing a framework for programming and budgeting through 1977 and based on "areas of concentration" - promotion of high-yielding varieties of cereals, closing the world's protein "gap", improving the trade and earnings of developing countries, war on waste in agriculture, better utilization of human resources and country and regional planning in agriculture. This plan will be reviewed every two years and altered as required.

New Members

In addition to admitting five new members, the Conference also authorized the Director-General to take "appropriate measures" to bring the People's Republic of China into the Organization when its government "manifests the wish to resume its place" in FAO.

The Director-General was also instructed to "render all possible moral and material assistance" to peoples seeking liberation from colonial and apartheid regimes, with the important limiting phrase "within the mandates" of the Organization.

Canadian Involvement

By the time the Conference and Council sessions were over in November 1971, Canada had been re-elected to the Council and to the Intergovernmental Committee of the World Food Program; had become a member of the Agriculture, Fisheries and Forestry Committees, and the Committee on Commodity Problems; had been appointed to the Council Ad hoc Committee on the Protein Problem; and a Canadian had been elected, in his personal capacity, as Chairman of the FAO Finance Committee (the author - Frank Shefrin).

It is estimated that some 35 Canadians are employed in professional positions at Headquarters and in the regional offices. A Canadian had, on December 1971, been appointed Assistant Director-General in charge of the Fisheries Department—the first Canadian to reach such a senior rank in the FAO.

A substantial number of Canadians also serve on FAO expert committees, being invited by the Director because of their professional expertise. Canada has joined the FAO Associate Expert Scheme. There are presently six associate experts posted with FAO. These

associates work in conjunction with an FAO expert. CIDA is financing this Canadian contribution.

In Retrospect

After three weeks of discussion, deliberations and communication with each nation's representative putting forth its views on all FAO matters, certain lines of direction emerged. The Conference, besides approving a program of work, passing a budget, re-electing the Director-General, handled a basketful of institutional chores and re-dedicated itself to the objectives of the FAO. The Conference had its excitement and discussions were occasionally emotionally charged, reflecting frustrations, impatience and political orientations. The less developed countries were lucid in their exposition of their needs. They stressed their desire to earn their own way with trade and rely less on aid. At the same time, it was apparent that more aid will be needed in the immediate decade.

It was also apparent why an accelerated development in agriculture was essential to the people in the developing and essentially agricultural countries.

Agricultural progress was equated with the expanding capacity of farm people to play an increasingly effective part in accelerating the national output through supplying their total economy with foods and fibers appreciably faster than population growth adds new mouths to feed.

An underlying theme throughout the Conference was that the aim of development should not merely be an increase in production, an end to famine and a reduction of poverty, but the creation of conditions in support of human dignity. Development, which thus far has been dominated by economic goals and thinking, in part perhaps because these lend themselves to measurement, is now being leavened by greater social consciousness.

Many of the leaders of developing countries are now calling for more human dimension to progress. Although they are well aware of the complexities inherent, they are even more aware of the dangers of ignoring social justice in the pursuit of progress.

GLOSSARY OF TERMS

SPECIAL BODIES OF THE UNITED NATIONS

- UNICEF—United Nations Children's Fund
- UNHCR—Office of the United Nations High Commissioner for Refugees
- UNRWA—United Nations Relief and Works Agency for Palestine Refugees in the Near East
- UNCTAD—United Nations Conference on Trade and Development
- UNDP—United Nations Development Programme
- UNITAR—United Nations Institute for Training and Research
- UNIDO—United Nations Industrial Development Organisation
- UNCDF—United Nations Capital Development Fund
- UNO—United Nations Organizations

INTER-GOVERNMENTAL AGENCIES

- Specialised Agencies
 - ILO—International Labour Organisation
 - FAO—Food and Agriculture Organisation
 - UNESCO—United Nations Educational, Scientific and Cultural Organisation
 - WHO—World Health Organisation
 - IBRD—International Bank for Reconstruction and Development
 - IFC—International Finance Corporation
 - IDA—International Development Association
 - IMF—International Monetary Fund
 - ICAO—International Civil Aviation Organisation
 - UPU—Universal Postal Union
 - ITU—International Telecommunication Union
 - WMO—World Meteorological Organisation
 - IMCO—Intergovernmental Maritime Consultative Organisation
- Other Agencies
 - IAEA—International Atomic Energy Agency
 - GATT—General Agreement on Tariffs and Trade
- Regional Development Banks
 - Inter-American Development Bank
 - African Development Bank
 - Asian Development Bank

POLICY AND PROGRAM DEVELOPMENTS IN CANADA

AGRICULTURAL PRODUCTS MARKETING ACT

(Saskatchewan Egg Order)

The Saskatchewan Commercial Egg Producers' Marketing Board has been authorized to regulate the marketing of eggs in interprovincial and export trade and for such purposes to exercise all its powers in relation to the marketing of eggs locally within the province under the Natural Products Marketing Act of Saskatchewan and the Marketing Plan.

The new "Saskatchewan Egg Order" extends to the Board the power to exercise federal powers in interprovincial trade for Saskatchewan eggs. It also extends authority to the Board to fix, impose and collect levies (indirect taxes) from the province's egg producers. The Board has agreed that there will be no restriction of interprovincial trade nor use of the levy power to undermine the markets of other Canadian egg producers. (2 May 1972)

(Alberta Milk Order)

The Alberta Milk Control Board is authorized to regulate the marketing of milk in interprovincial and export trade and for such purposes to exercise all its powers in relation to the marketing of milk locally within Alberta under the Milk Control Act of Alberta and the Plan.

Federal powers in interprovincial trade for Alberta milk are therefore granted to the Board, as is the authority to fix, impose and collect levies from persons engaged in the marketing of milk. (28 March, 1972)

AGRICULTURAL PRODUCTS COOPERATIVE MARKETING ACT

(Interim Payments by the Ontario Bean Producers' Marketing Board)

Following the 1971 bean marketing agreement, the Ontario Bean Producers' Marketing Board will pay to primary producers an interim payment of \$3 per hundredweight of pea beans and yellow eye beans delivered to the Board for marketing. (14 March 1972)

AGRICULTURAL STABILIZATION ACT

(Hog Stabilization Regulations 1972)

The national weighted average returns to hog producers

for the production year ended December 31, 1971 were below the mandatory 80 percent of the base price. The Agricultural Stabilization Board is therefore making a stabilization payment of \$5 per Index 100 or higher hog.

The hogs must have been delivered for slaughter in 1971 and the total amount paid to each producer will not exceed \$1,000. (14 March 1972)

CROP INSURANCE ACT

(British Columbia Crop Insurance Amendments)

The Agreement between the Minister of Agriculture and the Minister of Agriculture for British Columbia is being amended to provide for changes in the crop insurance plans for tree fruits, berry crops and grain crops.

The crops insured under this Agreement are wheat, oats, barley, mixed grain, apples, peaches, pears, apricots, prunes, plums, cherries, grapes, strawberries, raspberries, cranberries, logan berries, blueberries, strawberry plants, grapevines and fruit trees.

In 1971, 846 farmers, representing approximately 10 percent of the commercial farmers in the province, purchased \$8,040,700 worth of crop insurance coverage. The total premiums, including the federal share, amounted to \$636,054, and total indemnities to \$1,300,125, including \$925,000 to apple growers who experienced very heavy losses.

Since the beginning of crop insurance operation in British Columbia, the Insurance Administration has collected \$2,645,189 in premiums (including federal share) and has paid \$5,698,477 in indemnities for an over-all loss ratio of 2.15. The province of British Columbia has advanced funds necessary to meet the deficit. (24 May 1972)

GRASSLAND INCENTIVE PROGRAM CHANGED

Several changes in the regulations of the Grassland Incentive Program will be implemented before any more payments are made this year.

The changes will simplify the program and will include for payment acreage that was switched to forage production in 1971, but actually seeded in 1970, provided this forage is still in production this year.

The Grassland Incentive Program was introduced last year to increase forage production and to reduce the acreage used for grain and oilseed production. The federal government offered \$10 an acre to promote the increase in forage, that is a \$5 payment the year the forage is seeded and another \$5 when forage is in production.

This has been amended and from now on, no payment will be made in the year the perennial forage or legume crop is seeded but the complete payment will be paid the following year when it is proven that the crop is in production and that the increase in total forage acreage on the farm has been maintained.

Therefore, in 1972 each applicant will receive \$10 per acre for the increase in acreage that is producing forage in 1972 compared with the acreage that was in forage production in 1970, less any acres seeded to forage in 1970 that received a \$4 payment under the LIFT program, and less any advance payment received in 1971 under the Grassland Incentive Program.

Farmers will no longer need to divert a minimum acreage to forage in order to qualify for payments. The minimum under the old regulations was 25 acres.

The Grassland Incentive Program will apply until four million acres have been diverted from grain or oilseed production to forage, or the end of 1974, whichever deadline is reached first. On-the-farm inspections will be carried out in the summer or early fall this year, and in 1973 and 1974.

Further information with respect to these changes may be obtained by contacting the Director, Prairie Farm Assistance Administration, 500 Financial Building, Regina, Saskatchewan.

PRAIRIE FARM ASSISTANCE ACT

Prairie Farm Assistance Act benefits will be available to prairie grain growers for another year, and there will be no levy collected from growers for the extra year of operation.

Agriculture Minister H.A. Olson said legislation will be introduced to wind-up the Act by the end of 1974. Meantime, it is proposed to continue benefits to grain growers in all spring wheat areas who are not carrying crop insurance in the 1972-73 crop year. For the 1973-74 crop year, benefits will be limited to growers located in areas where crop insurance is not available under the federal-provincial program. (20 March 1972)

TAXATION

(Accelerated Depreciation for Grain Storage and Drying Equipment)

This new regulation allows grain producers and eastern Canadian grain elevator operators to depreciate new drying equipment and storage facilities at an accelerated rate. Capital costs of new equipment will be completely written off in four years.

Storage and drying equipment eligible for the new depreciation rates include: on-farm grain storage, on-farm grain drying equipment to a maximum of \$15,000, storage and drying facilities at primary elevators and processors' elevators in eastern Canada.

The new tax allowance will apply to new facilities acquired between April 1, 1972 and August 1, 1974. This regulation was especially designed to ease the strain on the available storage space for grain in eastern Canada which has not kept pace with production increases. The corn industry in Ontario and Quebec has particularly been affected by this problem. The program was extended to grain producers in western Canada where more farm storage was also needed. Primary elevator facilities in western Canada were excluded to avoid prejudging the current examination of the grain storage and transportation system.

Details about the new depreciation allowances are available from District Taxation Offices.

DAIRY POLICY 1972-73

The Canadian Dairy Commission has been authorized to implement a program for the coming year that will permit a substantial increase in the base support level for manufacturing milk.

Subsidy on manufacturing milk and cream, under CDC's quota system will remain at \$1.25 per 100 pounds of milk testing 3.5 percent butterfat.

Skim milk powder offer-to-purchase price will be 29 cents per pound — a 3 cent per pound increase. Other offer-to-purchase prices will remain at 68 cents for butter and 54 cents for cheddar cheese.

Emphasis in the program on skim milk powder is aimed at providing a better balance between butter and cheese production and in order to avoid the possibility of over-production of cheese.

The holdback on in-quota milk deliveries will be retained at the 1971 level of 10 cents per hundred pounds of

butterfat, and no holdback will be made on cream deliveries within quotas.

While the threshold at which over-quota holdbacks apply will revert to the quota level, production patterns will be watched closely and, should production warrant, exemption levels will be reinstituted retroactively.

The successive increase in support prices last year has arrested a downward trend in production in the last quarter of 1971 and production is now on an upturn.

FEED FREIGHT SUBSIDY CHANGES

Changes have been made in the Canadian Livestock Feed Board's freight subsidies for feed grains. These changes, effective April 1, 1972, affect the following areas:

Nova Scotia: An increase of \$3.20 a ton to Guysborough County, 60 cents to Queens County, and \$1 a ton to Richmond and Inverness counties.

New Brunswick: An increase of 80 cents a ton to Restigouche County and 60 cents a ton to Gloucester and Northumberland Counties.

Quebec: An increase of \$3 a ton to Gaspé East, Gaspé West, Saguenay and Bonaventure, \$1 a ton to Chicoutimi, Gatineau, Lake St-Jean West, Lake St-Jean East, Rimouski, Rivière du Loup, Stanstead and Temiscouata, 60 cents a ton to Compton, Labelle, Matane and Matapédia counties, and finally a \$5 increase to Abitibi and Temiscamingue.

Ontario: An increase of \$3 a ton to Algoma, Manitoulin, Sudbury, Nipissing, Parry Sound and Cochrane districts, and a reduction of \$4.20 a ton to the Thunder Bay district.

British Columbia: A reduction of \$1.20 a ton in the southern interior.

No changes were made in subsidy rates in Prince Edward Island and Newfoundland.

CANADA SHEEP MARKETING COUNCIL FORMED

A Canada Sheep Marketing Council has been formed at a meeting of representatives of lamb, wool and sheep associations from across Canada.

The sheepmen decided an important first step was the formation of a marketing council to provide industry coordination of marketing efforts and to recommend changes to improve returns to sheep producers.

The Council is not a marketing board, but it will offer opportunities to coordinate action. It plans to assist existing provincial marketing groups, improve the grading system and promote the products.

The initiative shown by the sheep industry in establishing the Council was welcomed by the Agriculture Minister H.A. Olson. "The federal government", he said, "is willing to provide assistance to the Council up to \$250,000 in the first year".

NATIONAL FARM PRODUCTS MARKETING COUNCIL

Agriculture Minister H.A. Olson, has announced the appointment of six members to the National Farm Products Marketing Council.

The Council, which will have its headquarters in Ottawa, will begin operations soon, overseeing the establishment and operation of national marketing agencies for various farm commodities.

The appointed chairman is Mr. Paul Babey of Edmonton, Alberta, and the vice-chairman Mr. Real Roy of Boucherville, Que. Other members appointed were Mr. Ralph Ferguson of Alvinston, Ontario; J. Adrien Levesque of St. Leonard, New Brunswick; Hector Hill of Truro, Nova Scotia; and Albert Vielfaure of La Broquerie, Manitoba.

The first applications to form national marketing agencies are expected from egg and broiler chicken producers. (28 March 1972).

DEVELOPMENTS ABROAD

Highlights from "Spot News from Abroad", the newsletter issued by the International Liaison Service of Canada Agriculture, in co-operation with the trade Commissioner Service of the Department of Industry, Trade and Commerce.

Grains

International Grain Trade

As a result of the continued strong demand for grains from the Soviet Union, Eastern Europe, China and Japan, the recovery in international trade noted in the later months of 1971 has continued into 1972. The volume of exports recorded so far for 1971-72 by the main exporting countries is now estimated to be about 4.5 percent greater than a year earlier. Shipments of wheat and flour are still marginally lower than last season, but the combined exports of feed grains are now estimated to be about 10 percent greater than last year, reflecting a marked expansion in trade in corn.

The strong demand for feed in Europe and Japan has led to a big expansion in international trade in corn this season. Exports recorded so far for 1971-72 are over 20 percent higher than a year earlier. Argentine exports benefited earlier in the season from the reduced American supplies following the smaller 1970 harvest and they have continued to flow at a substantial level, with especially large shipments to Spain and Chile; over the first 11 months of the season the trade was almost 10 percent higher than in 1970-71.

Exports of wheat and wheat flour recorded so far in 1971-72 by the eight main exporting countries have recovered sharply in recent months and are now estimated to be less than one percent below last season's level. International trade in barley in the first months of 1972 has been rather slower than a year earlier so that aggregate shipments recorded so far for the 1971-72 season by the nine main exporters are estimated to be some 15 percent below their level last year.

Trade in oats continues to run at about a third below its last year's level, with sharply reduced consignments from the United States and Canada, though the fall has been partially offset by an expansion in exports from Sweden which is the biggest shipper so far in 1971-72. Trade in rye continues to be over 50 percent higher than last season, reflecting big sales by Canada to Japan and a moderate recovery in exports from the United States which were negligible in 1970-71. (Grain Bulletin, Commonwealth Secretariat, London, March 1972)

Livestock

US Beef Prices Unlikely to Show Heavy Decline

Given a satisfactory economic framework, US beef prices are unlikely to show significant declines in the intermediate future, although some easing from last month's highs are possible, according to Irv Fishman, vice-president, and general manager of the slaughter division of Spencer Foods, Inc., a leading Iowa beef slaughtering firm. Mr. Fishman stated that the shortage of cattle is the key to the current meat price situation — a condition due to high corn prices last year which had discouraged cattle feeding.

This development had resulted in a squeeze on packers' profits stemming from their inability to operate at full capacity. Thus, the narrow margins which have traditionally characterized the industry had been subjected to additional pressure by the inflexibility of higher overhead costs in the form of labor and capital expenses. Mr. Fishman stated that while the shortage of cattle would be alleviated later as a result of lower feeding costs prevailing in recent months, the combination of consumer demand for beef and reduced competitive pressure from lower pork supplies would sustain beef quotations. (Journal of Commerce, April 13, 1972)

Decline of the British Sheep Industry

A report on the U.K. sheep industry, the work of a team drawn from the NFUs of England, Wales and Scotland, the British Wool Marketing Board, and the National Sheep Association, indicates that, for 10 years, there has been a progressive decline in sheep production in Britain. The decline initially occurred in those areas where sheep compete with other agricultural enterprises and subsequently in all areas. This decline has resulted directly from diminishing profitability associated with guaranteed returns for sheep and wool, which had fallen steadily in real terms.

The market for lamb has tended to weaken over the years relative to that for other meats partly due to competition from an expanded supply of pork and poultry and partly due to the failure of the distributive trade to adapt its methods of selling lamb to modern consumption patterns.

Under the support system, finance is provided by means of guaranteed prices for fat-stock and wool, annual grants to maintain the hill ewe flock, and capital grants for maintaining and improving the fixed resources, land and buildings. The report considers that the comprehensive machinery of support is frustrated unless the prices it guarantees and the grants it provides are individually adequate and mutually balanced. Thus the neglect of end prices in favour of production grants has resulted in the serious decline in sheep numbers in those sectors to which the production grants do not apply. (IFAP News, February 1972)

Beef from Developing Countries to European Markets

Convenience foods are revolutionizing Western European eating habits and changing the pattern of beef consumption. These changes may create increasing opportunities for beef suppliers in developing countries; one of the most significant aspects of the convenience-food trend is that it is cleaving the beef market into two distinct segments.

While the traditional market for fresh beef sold for direct consumption is leveling off (except in Italy) and is being increasingly supplied by European production, the market for industrial-grade beef, used to make convenience foods, is growing and is relying more and more on imports.

This is the kind of beef that developing countries have the best chance of exporting. Many of them raise the lean, rangefed cattle preferred by manufacturers. It is less tender than the beef sold in butcher shops, but it stands up better in processing.

Of special interest to developing countries is the record of European imports from areas other than traditional sources. Botswana, Cuba and South Africa ship frozen beef to the United Kingdom. Italy gets a large portion of its frozen beef from Romania, and much of its fresh and chilled meat from Eastern Europe, primarily Yugoslavia. The largest African exporter to Western Europe is Madagascar which ranks second only to Argentina in sales of frozen beef to France. (International Trade Forum, October-December 1971)

US — Number of Hogs and Prospective Pork Supplies

After analyzing figures obtained by a survey of farmers in ten leading hog-producing states, providing about three-fourths of all hogs raised in the United States, USDA statisticians made the following estimates: the number of hogs on March 1 totaled 41,792,000 — six percent below last year's figure. The number kept for breeding was 6,449,000 — down eight percent. And the

number for market was 35,343,000 — six percent fewer than last year.

Most of the 35.3 million hogs being kept for market will be converted to pork during the seven months of March through September. While the number of hogs available for market in this period is about six percent smaller than the exceptionally large number available a year ago, it is eight percent greater than the number reported two years ago; also, almost 10 percent more than the average number available for the four years 1967 through 1970.

For 1972 as a whole, commercial hog slaughter now seems likely to fall five to seven percent short of last year's record volume. On previous occasions, such a reduction in the supply has often lifted prices by about 20 percent. The prices for barrows and gilts at the seven Midwest central markets averaged \$18.45 last year. Adding 20 percent to that figure would make a little more than \$22. (Illinois Farmers' Outlook Letter, Urbana, Illinois, March 29, 1972)

Dairy Products

British Imports of Butter

The British Minister for Trade has announced that Britain has decided to supplement the quota system for imports of butter into Britain by an open licensing system whereby all butter from all sources except Rhodesia can be imported beginning April 1, 1972. The individual country quota allocations will continue at the same level as in 1971-72, 420,000 long tons. As of February 1, 1973 these arrangements will be superseded by the application of the Common Agricultural Policy (C.A.P.) of the E.E.C. (Canadian Commercial Counselor, London)

New Zealand 1970-71 Dairy Production

The New Zealand output of milk and dairy products during 1970-71 was just equal to that of 1969-70. The main contributory factors were further drought conditions in some areas, the continued effects of the switch to dairy beef, and the slow recovery of pastures following severe drought in 1969-70. In order to fulfil overseas sales commitments for cheese, the New Zealand Dairy Board arranged to divert milk from butter/casein to cheese.

Butter production stood at 229,100 tons, 7,000 tons less than in 1969-70, and cheese production was 106,100 tons, 7,500 tons less than in 1969-70. Skimmed milk powder production rose to 122,976 tons as against 110,522 tons the previous season, while casein production fell by 7,227 tons to 54,751 tons. Buttermilk

powder manufacture declined from 20,548 tons to 18,706 tons. (Agra Europe)

Oilseeds

France — 1971 Imports and Exports of Oilseeds

Total French imports of oilseeds for 1971 reached 188,645 metric tons of which 175,105 tons came from Canada. This compares with 51,238 tons imported in 1970, of which 41,439 tons were provided by Canada. Thus total imports increased by 137,407 tons while imports from Canada increased by 133,666 tons.

Total French exports of oilseeds for 1971 reached 210,669 metric tons, compared with 199,009 tons last year. Main destinations were Italy with 175,574 tons, and Algeria with 19,446 tons, which is 15,756 tons less than last year. The outlook for total exports during the 1971-72 campaign would be 245,000 to 265,000 metric tons (200,000 to 220,000 to Italy; 25,000 to Algeria and 20,000 to other countries). The Italian market remains accessible because of a transportation premium. (Canadian Commercial Assistant Agriculture, Paris)

ECC Concerns about Soybean Demand-supply Situation

A delegation of FEDIOL, the Federation of Common Market Oilseed Processors, arrived in Chicago on April 24, 1972 to begin a tour of soybean growing areas of the United States. According to Mr. Blankestijn, spokesman for the group, the Soybean Commission of the Common Market has been concerned for some time about the supply and demand picture of soybeans and soybean products.

This concern has grown, particularly after the publication of the planting intentions for the 1972 season in the U.S., which represents only 45.5 million acres. FEDIOL is of the opinion that the soybean supply in the immediate future, and also in the years to come, cannot meet the growing demand. Mr. Blankestijn added that in 1971, Common Market members processed eight million tons of oilseeds, of which 4.9 million tons were soybeans.

Total soybean meal consumed in the Common Market in 1971 was 6.6 million tons, of which 2.6 million was imported, mostly from the United States. In 1971 Common Market members had a processing capacity of 180 million tons. In 1974 this figure will be closer to 280 million tons, according to Mr. Blankestijn, who said that Common Market members will still need to import 2.5 million tons of meal. (The Journal of Commerce, New York, April 26, 1972)

U.S.S.R. Oilseeds

The U.S.S.R. 1971 vegetable oil production was 2.9 million tons (compared to 2.817 million tons in 1970, and 2.979 in 1969). The 1971 increase over the 1970 level is ascribed to the 1970 bumper cotton crop. It is expected that the 1972 vegetable oil production will drop back to the 1970 level.

With livestock numbers still increasing (though less rapidly than a year ago), the requirements for protein supplements for livestock feed continue to grow. The U.S.S.R. is presently buying feed grains from the U.S.A. They may in the near future be in the market for vegetable oil. (Canadian Assistant Commercial Secretary, Moscow)

Fruit and Vegetables

FAO/WHO Commission Discuss Possible Hazard of Spinach to Babies

In spite of what spinach does for grown-ups like Popeye, when very young babies howl objections about eating their spinach they are probably right to do so. Several delegations to the Codex Alimentarius Commission's Committee on Foods for Special Dietary Uses, meeting in Bonn recently, spoke in favor of prohibiting the use of spinach for babies less than three months old because of possible hazards arising from nitrates present in spinach - both fresh and quick-frozen.

The Commission was established to implement the Joint Food Standard Programme of the Food and Agriculture Organization (FAO) and the World Health Organization (WHO). The international standards it sets may be enforced by governments on a national basis. Since, in the public's belief, spinach is a valuable food, it was suggested that adequate warning "concerning the unsuitability of this product for the very young infant" may be necessary on labels.

The Committee's report reveals that it was of the opinion that "the high nitrate content of spinach carried the potential danger of causing methaemoglobinaemia (a form of blood poisoning) in early infancy", and noted that "the problem of reduction of nitrate to nitrite would also apply to other vegetables with a high nitrate content". (FAO)

General

EEC — The Non-candidates Negotiate

In December 1971 the six non-candidate countries (Austria, Finland, Iceland, Portugal, Sweden, Switzer-

land) of the European Free Trade Association (EFTA - A Single Market of Nine Countries and 100 Million People) began their negotiations with the EEC, aimed at special relations agreements based on free trade in industrial and agricultural products. The EEC Commission is conducting these negotiations on the basis of a mandate from the Community Council of Ministers. The aim is to be able to sign the special relations agreements in June 1972.

The objective is to have all the special relations agreements come into force at the beginning of 1973, i.e. at the same time as Britain, Denmark, and Norway are to enter the EEC as members. Certain points in the discussions relate to agriculture.

Austria is dissatisfied generally with the present Community mandate in relation to agricultural products. **Finland** is particularly concerned about the Community suggestion that free trade in paper products should not be reached for twelve years, instead of the normal five-year transition period for the abolition of tariffs, quotas, etc. **Iceland** complains that the Community offers normal free trade treatment on only a minute proportion of those Icelandic exports, mainly fish products, at present subject to tariffs or other trade barriers by the Community. **Portugal** is not satisfied with the Community offer in her case, since it falls short of offering a sufficient degree of free trade to Portuguese exports. Many of these are accorded free trade treatment in EFTA but are classified as agricultural products by

the Community, subject to various special entry regimes. **Sweden** continues to hope that the Community will offer a wider agreement generally than at present envisaged. **Switzerland** also has some unsettled points remaining to be negotiated. The suggested 3-year freeze on Community tariff reductions on watches is held by the Swiss to be unequitable, as also is the limited Community offer on processed foodstuffs. (EFTA Reporter, April 12, 1972)

U.S. — Farms and Land in Farms

The U.S. had an estimated 2,876 million farms operating during 1971, two percent less than in 1970. The preliminary estimate for 1972 indicates that 2,821 million farms will be in operation. This reduction would be similar to the percentage declines of the past few years. Total land in farms, estimated at about 1,117 million acres for 1971, continues a steady decline but at a much slower rate than for farm numbers. For 1972, the preliminary estimate of land in farms is 1,114 million acres.

The past decade saw a 25 percent decline in number of farms while only a four percent drop was recorded in farm land. These changes are associated with a 27 percent increase in the average size of farms. The continued disappearance of small farms along with mergers into larger, more efficient operations contributed most to the change in farm numbers. Urbanization and highway construction were the major causes of decline in farm land. (USDA)

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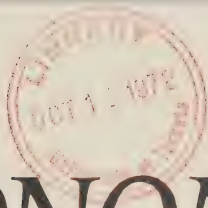
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Canadian Farm Economics is published bi-monthly by the Economics Branch, Canada Department of Agriculture, Sir John Carling Building, Ottawa, and is based on material prepared by economists of the Economics Branch.

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Letters from readers: Letters are encouraged and should be addressed to the author or to the Managing Editor. Responses . . . comments, suggestions and points of view are important for effective two-way communications. Letters may be used in the following issue of CFE and will be edited prior to publication where necessary.

CANADIAN FARM ECONOMICS

IN REPLY FROM READERS:

There are a great many one-way messages being sent today and the person at the receiving end has very little chance to talk back.

Communication is a two-way process. It should provide opportunities for both parties to exchange views, ask questions, and receive explanations. This would contribute to much more understanding among individuals, institutions and among large groups of people. This is why we look forward to receiving your letters. We need your reactions and your feedback when you read our articles.

However, I realize you don't always have the time to write a letter - so I have included a short "In reply" sheet for you, at the back of this issue. This will be a regular feature of *Canadian Farm Economics*. Would you look it over and fill it out to express some of your views on what is said in this issue and then please return it to me.

Your reply may help us at this end of the communication process to further improve future issues of this publication.

I look forward to hearing from you.

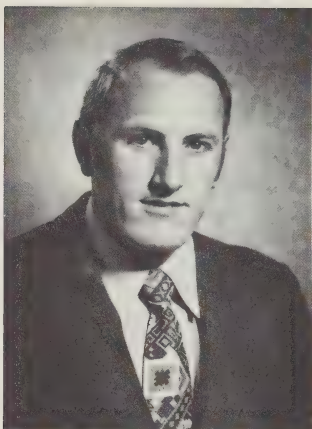
So long for now,

A handwritten signature in black ink that reads "John J. McConnell". The script is fluid and cursive, with the first letters of each word being capitalized and prominent.

Managing Editor.

P.S. We are gearing up for more work on marketing. In the back section of this issue you'll find a number of publications on marketing.

USING COMPUTERS IN THE FARM BUSINESS



B.H. Sonntag*

Computers can help farm managers make better decisions, particularly long-run investment and growth decisions.

Modern commercial agriculture is characterized by rapid technological change, increasing size of production units, and continuing substitution of durable capital goods for labor. While short-term production decisions continue to be vital, investment and related financial decisions are becoming increasingly more critical. These latter decisions can have long-lasting effects on future cash flows, annual net income, and growth in net worth. Effective decision-making in this environment requires greater emphasis on long-term planning, planning which attempts to evaluate the consequences of alternative decisions before resources are committed. The complexity of the decision-making process suggests that farmers could benefit materially from computer-oriented management tools which have the capacity and flexibility to accommodate their particular situations. This article describes a computerized farm management decision tool which can be used in planning the organization and future growth of farm businesses. These computer models do not replace the manager as the decision-maker; they merely facilitate the performance of the management function.

Farmers need various types of information in order to effectively manage their farm businesses¹. This information can be obtained in various ways. In this article

we are concerned with formal, systematic procedures for gathering and analyzing this information. Many different types of programs have been developed to assist farmers in identifying and diagnosing management problems. The farm accounting and business analysis programs provided by universities, provincial governments and, more recently, CANFARM are examples. These programs provide a systematic procedure for recording the state of the farm business (physical and financial) at a given point in time and often provide data for other forms for comparative purposes. The next step in the decision-making process is to use this information and other data for forward planning, i.e., to predict the outcomes of alternative future courses of action.

This article discusses computer models which can be used to test a whole series of alterations to the existing set of resources and thereby provide a basis on which to make feasible and beneficial changes in the organization of the farm. Systematic appraisal of alternative investment plans will become more critical as agriculture becomes more capital intensive. The article proceeds from general considerations of decision-making and farm-firm growth processes, to a discussion of one computer model which farmers are using to solve management problems. This discussion has several purposes:

- (1) To alert researchers, extension workers, farmers, and agri-business personnel to the existence of certain formal techniques for long-run planning.

¹ See (1,3) for discussions of the information needs for effective management.

*Dr. Sonntag has been working on interdisciplinary economics research at the Lethbridge station since completing his Ph.D at Purdue University in 1971.

- (2) To emphasize the need for joint involvement of animal scientists, economists, agronomists, engineers, and others in developing useful decision aids.
- (3) To indicate plans for development of farm management decision aids for Canadian farmers.
- (4) To describe the ways in which some farmers are using modern computer technology to help solve management problems.

DECISION MODELS AND THE DECISION PROCESS

Every farmer faces the problem of allocating his scarce supply of resources (land, labor, capital, management) among a number of alternatives. He must make decisions on (1) what to produce, (2) what production methods to use, (3) what production schedule to follow, (4) what quantities of inputs to purchase, (5) when and where to buy and sell, (6) the kinds, sources, and amounts of financing required and the like. Each farmer evaluates his alternatives in his own way and selects those that are consistent with his goals and objectives. The decisions may be made on an intuitive basis or with the assistance of formal decision-making tools².

Figure 1 is a conceptual model or picture of the manner in which the individual farmer's decision-making process operates^{3, 4}. The farm-firm's current resource position or capital stock reflects the outcomes of decisions made in the past. The current position of the firm with respect to specific assets, debts, and net worth affects the farm

family's goals and aspirations for the future and places some restraints on the alternatives that are available in the future. The goals of the farm family can change over time in response to many other forces including financial outcomes from decisions made in the past; changes in age and composition of the farm family; and changes in preferences, attitudes, knowledge, and skills of members of the family. The goals of the farm family form the criteria or basis on which the expected outcomes of various alternatives are evaluated. The alternatives which the manager is willing and able to consider at any point in time are determined by personal preferences and specific goals, the current resource position of the firm, and by external forces beyond the control of the decision-maker. The relevant set of alternatives must then be analyzed and evaluated on an intuitive basis or with the assistance of formal decision aids. Yield and price expectations are brought to bear on this set of alternatives and a decision is made and implemented.

Imperfect knowledge, with respect to the future, forces reliance on expectations in the planning and decision-making process. These expectations are based on experience, historical prices and yields, market outlook information, changes in government policies and programs, soil moisture conditions, and other factors. A consequence of the uncertainty concerning future conditions and events is the possibility that the outcome from the implemented alternative may differ from that expected at the time of implementation. Unexpected outcomes result in changes in expectations. The revised expectations then influence subsequent analyses and decisions. The existence of uncertainty forces decision-making to be a dynamic, continuous process of learning and re-evaluation in the light of new information (6,7).

² A wide range of formal decision-making tools are available. These include simple budgets at one extreme to sophisticated computerized farm planning aids at the other. The computerized farm planning tools can be thought of as "automatic budgets" where the necessary calculations are performed by the computer rather than by manual methods. These computerized budgets are often called "decision models" (5, 6, 8). The data used in these models can be based on research results, averages from other farms, or records from the farm being budgeted. The computer model or budget described in this paper uses all of these sources. Furthermore, many of the coefficients in the model can be altered by the user to reflect his own situation.

³ A model can be generally defined as a simplified representation of some real phenomenon or situation. Models can take many forms. They may be physical representation as in the case of scale models of buildings. Models may be symbolic as is the case in Figure 1 where a diagram is used to depict the farm manager's decision-making process. A computer model such as the one described in this paper is another form of symbolic model where real world processes are represented or "modeled" in mathematical terms.

⁴ Figure 1 is adapted from (9, p. 493).

THE FARM-FIRM GROWTH PROCESS

Firm growth can be defined as the process through which firms acquire control of the services of additional resources by paying a price less than they will earn and thus add to the net worth of the farm. Growth is made possible through the generation of investable funds. These are obtained from disposable income (net income after cash operating expenses, taxes and loan payments) in excess of cash withdrawals for living expenses (consumption) and from credit sources. The growth path and the rate of growth are affected by the managerial ability, goals, and attitudes of the farm operator; the institutional environment (marketing quotas, loan limits, tax laws, etc.); risk and uncertainty; and resource availability. As indicated in Figure 1 these are important elements in the decision-making process, which directs the growth of the farm-firm.

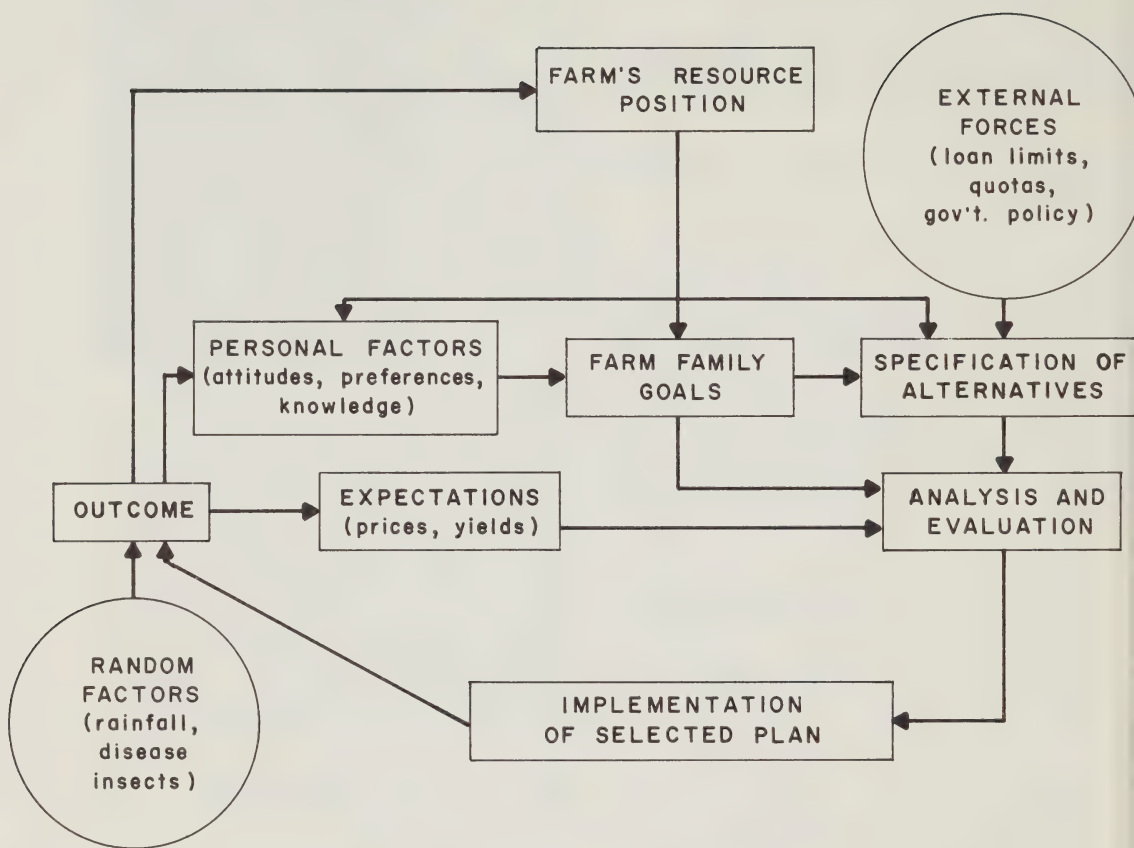


Fig. 1 - The Decision-Making Process

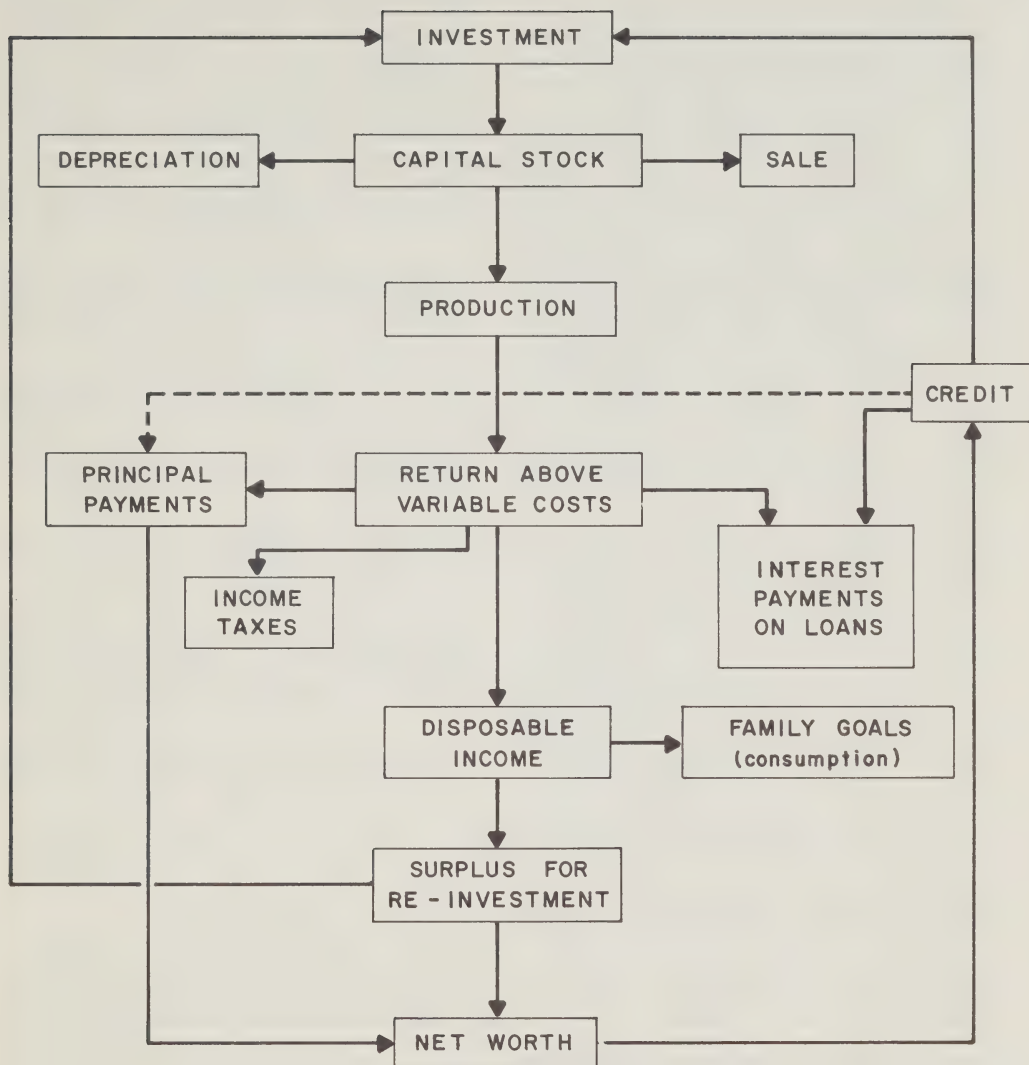


Fig. 2 - The Farm-Firm Growth Process

Figure 2 is a conceptual model or picture of the farm-firm growth process⁵. Funds for new investment are generated from disposable income in excess of consumption withdrawals, and from the external capital market. The productive capacity of the firm at a given point in time consists of the capital stock of the previous period plus new investment less capital sales and depreciation. These resources (land, buildings, machinery, etc.) are used in the selected production processes. The amount of disposable income available to the farm family is dependent upon the productivity of these processes and the cash withdrawals for income taxes and principal and interest payments on outstanding loans.⁶ The disposable income of the farm family is allocated between consumption and savings (investment)⁷. If production has been profitable the net worth of the firm will increase, provided, of course, that all profits are not consumed. Principal payments and re-invested disposable income increase the net worth of the firm. A larger net worth increases the borrowing capacity of the firm which, in turn, permits the firm's productive capacity to be increased. New loans incurred to increase the productive capacity increase the principal and interest commitments for future periods.

The interdependence of production and investment decisions in the growth process is evident from Figure 2. Current production and investment decisions are dependent upon both past and future decisions. The inventory of buildings, land, machinery, and other assets that has been accumulated as a result of past decisions imposes some restrictions on current and future choices. Since different processes require differing relative amounts of resources, a decision to deviate from a previous production plan may require substantial new investment and possibly abandonment of some existing resources. A further consideration is the extent to which current decisions restrict the firm's ability to alter its production plan in the future. These factors can have important effects on the production and investment plan ultimately adopted.

THE PURDUE UNIVERSITY HOG-CORN MODEL

The processes involved in managing and directing farm businesses were described in the preceding sections. The

Purdue University Hog-Corn Model is a specific example in which these processes are formalized into an operational computer model which can be manipulated to facilitate study of a wide range of management problems encountered by hog producers in the U.S. corn belt⁸. It is being used by farmers in the Purdue Top Farmer Swine Workshops as an aid in planning the organization and future growth of their own farm businesses⁹. The computer model is assisting these farmers in answering the following types of questions:

- 1) Should I purchase feeder pigs, produce feeder pigs, or have a farrow-to-finish operation?
- 2) What type of housing should I build, a high investment-low labor system, a low investment-high labor system, or some combination?
- 3) How often should I farrow or purchase feeder pigs; one, two, three, four, six, or twelve times per year?
- 4) During which months should I farrow or purchase feeder pigs?
- 5) How large should my swine enterprise be?
- 6) How fast should I expand?
- 7) If I continue to use the types of buildings I now have and maintain the same management system, how much can I expand and how profitable might it be?
- 8) How might I expect debt restrictions, labor efficiency, prices, etc., to affect the expansion and organization of my business?
- 9) How do these factors affect cash flow, consumption, and net worth?
- 10) Can I pay for additional buildings?

The Purdue University Hog-Corn Model is not directly applicable to Canadian conditions. It is discussed here to help make Canadian agriculturalists aware of the existence of this type of management tool. It is anticipated that similar kinds of models will be constructed.

⁵Figure 2 is adapted from (2, p. 5).

⁶Annual disposable income is defined as the annual net revenue above variable costs less annual debt servicing (principal and interest) and taxes. Thus, it is the quantity of funds available for consumption and re-investment.

⁷Savings may be allocated to farm and/or non-farm investments. Both forms can, however, affect the net worth of the farm through their effects on the farm's borrowing capacity.

⁸The detailed content of the model and how to use it are described in (10) and in forthcoming research or extension bulletins from the Purdue Agricultural Experiment Station, Lafayette, Indiana. The structure and solution procedure for the model are described in (7, 10).

⁹The first Top Farmer Swine Workshop in which the computer model was used by farmers was held in December 1970. Other workshops with farmer participation were held in July, 1971 and January and July, 1972. More are planned for the future.

ted for use by Canadian farmers. The explanation which follows refers specifically to the Purdue model but it can be interpreted to apply more generally to other models which have been or may be developed for similar purposes.

Some of the features incorporated in these models to enable them to be used for planning purposes are:

- 1) Sufficient flexibility to permit a detailed description of the current resource position of the farm through the use of a set of forms and simple user instructions.
- 2) A report, in the form of self-explanatory tables, that permits detailed analysis of the growth potential of the farm.
- 3) A wide range of production and investment alternatives for livestock and crop production.
- 4) A wide range of efficiency standards that allow the user to reflect his managerial ability or technical competence.
- 5) Capability to permit specification of farm family goals regarding consumption requirements, debt limits, and production preferences.

The user of the model communicates with it through an input form. A completed input form for the Purdue University Hog-Corn Model contains the following information:

- 1) Inventory of buildings, machinery, land, hogs, and other assets with detail on type, capacity (amount), and age.
- 2) Permanent and seasonal hired labor availability on a biweekly basis.
- 3) Financial situation -- debts, payment commitments, cash balance.
- 4) Hog and corn production and investment alternatives to be considered.
- 5) Restraints under which the farm operates -- loan limits, restrictions on labor supply, restrictions on rate of expansion, enterprise size limits.
- 6) Technical coefficients -- litter size, mortality, feed conversion, labor inputs, corn yield.
- 7) Prices -- hogs, corn, wage rates, interest rates, buildings, machinery.

- 8) Family consumption requirements -- the amount withdrawn annually from the farm business for living expenses.

With the information provided the model "runs" a number of budgets and develops a detailed report on the one that results in the largest terminal net worth of the firm, or in other words, the highest return on owned capital or maximum profits.

The output from the model is a set of tables which provide the following types of information:

- 1) Physical activity levels -- number of sows farrowed, corn acreage, number of hogs purchased and sold, amount of labor hired, machines and buildings purchased.
- 2) Hog building system -- the capacity, type, and remaining value of buildings.
- 3) The management system used -- e.g., two-litter farrow-finish, four-litter farrow-finish, etc.
- 4) Financial situation -- annual change in net worth, amount and value of various types of assets and debts, new loans, cash balance.
- 5) Resource flows - biweekly flows of cash receipts and expenses for corn and hogs, corn production and use, labor utilization and hog sales and purchases.
- 6) Withdrawals -- loan payments (principal and interest), income taxes, and family living expenses.
- 7) Limit to expansion -- the factor which prevented further expansion of the farm business.

POTENTIAL USES OF THE PURDUE HOG-CORN AND SIMILAR MODELS

The model can be used for a number of purposes. It can be used by an individual farmer as a decision-making tool to plan the growth and organization of his business, to evaluate new technologies as they might apply to his own farm, or to convince his banker to extend credit for new investments.

The model can be used as a teaching device. It has been used several times for this purpose: at Purdue University in Swine Management Workshops in the Top Farmer Program; in agricultural economics courses at Purdue and the University of Saskatchewan; and in demonstration workshops at the University of Saskatchewan and

the Canada Department of Agriculture, Research Station, at Lethbridge.

The model can be used for research purposes. An agricultural economist may use it to test hypotheses on optimal production-management systems in various situations or to evaluate the relative profitability of recommended practices as compared to existing ones. A physical scientist may use it to examine the effects of particular technical relationships on farms of various types. The model may be used by a credit agency to examine the impact of loan limits, interest rates, repayment terms, and the like on the growth potential of agricultural firms. In all of these applications the model can be used in conjunction with experimental designs and other techniques of analysis.

The use of this type of model in Canada for the above purposes pre-supposes the development of similar models adapted to Canadian conditions. Research is underway in the Canada Department of Agriculture and elsewhere to develop systems models of agricultural enterprises of various types. Many of these have a research orientation, i.e., they are primarily designed as aids to evaluation of research effort in the various branches and institutes in the Department. Others have a farm planning orientation, i.e., like the Purdue Top Farmer Hog Model, they are designed to aid farmers and extension workers in making production and investment decisions for specific farm situations. The Canfarm Data System, for example, plans to incorporate a number of farm management decision aids into the CANFARM system. This system may ultimately provide Canadian farmers with access to a wide variety of decision aids in addition to the farm accounting service currently available. A research project aimed at developing a beef systems model for farm business planning in western Canada is now underway¹⁰. It will include many alternative breeding, feeding, and housing systems for beef cattle; alternative sources and production methods for pasture and stored feed; financing alternatives; and other features that will enable the application of the model to a wide range of situations where beef is a current enterprise or contemplated as a potential enterprise.

¹⁰ This project which involves the Canada Agriculture Research Station at Lethbridge and the Department of Agricultural Economics, University of Saskatchewan, is aimed at developing models conceptually similar to the Purdue model described above. It is expected that a simple budget version will be operational in mid-1972 and that longer term planning models will be completed in 1974. The Purdue University Hog-Corn Model is being revised to accommodate western Canadian grain production systems.

The development of appropriate decision models will require inputs by scientists from a large number of disciplines. A fundamental requirement of a model that is to be used for the above types of extension and research purposes is adequate representation of the physical relationships involved in crop and livestock production (11). It is anticipated that the results of past research work at research stations and universities will provide much of the necessary data. The judgment and experience of the physical scientists involved in this work will be a valuable asset in identifying the relevant production alternatives and interpreting the results of past work. Where gaps exist in the data, new experiments may be undertaken to identify those relationships. These experiments are likely to be integrated into the program of the appropriate research station. All data needs cannot, however, be fulfilled through research station experiments. Additional data will need to be obtained through enumerative farm surveys, farm records, and other sources.

Many researchers in the physical sciences have indicated a great deal of interest in computer models of the type described here. Many of these scientists are now co-operating in their development. Several reasons for this can be identified. First, models of the sort planned provide a means whereby the results of research projects can be extended to the farm community. Secondly, the development of such models may indicate important areas for future experiments. Thirdly, there is no reason why the results of research projects developed to fill data gaps in these models cannot be published in the regular publications of the scientific discipline concerned. Fourthly, cooperative work with other disciplines may provide a basis for publishing research results in a wider range of publications. Fifthly, these models will allow the researcher, as well as the farmer, to assess the economics of new technologies.

The interdisciplinary nature of the work concerned with development of an appropriate model should be evident. The joint involvement of animal scientists, agronomists, economists, engineers, and specialists within these groups is an important element in the development of adequate models. The success of the Top Farmer Program at Purdue University, referred to earlier, is, in large part, attributable to good cooperation among disciplines and between research and extension workers within disciplines. Similar cooperation will be necessary if useful models are to be developed in Canada. The interest that has been shown to date suggests that this kind of cooperation will be forthcoming.

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The author wishes to acknowledge the helpful comments made by I.F. Furniss, R.K. Sahi, J.J. McConnell, K.J. McKenzie, J. Guinan, and V. Gilchrist on earlier drafts of this article.

CANFARM'S

COMPUTERIZED FARM RECORDS

CANFARM "keeps the books" for 8,000 farmers. More are enrolling. Here's how the System works.



*L. Bauer**

The main objective of CANFARM's Farm Records Program is to develop and operate a computerized Farm Records System that regularly provides farmers with useful information about their businesses. The secondary objective is to collect data on a comparable basis across Canada for extension and research purposes. The service was first offered to 400 farmers on a trial basis in 1969. By 1970 the number had grown to 4,200 farmers and this year, 1972, nearly 8,000 are enrolled. Of these, 2,800 are enrolled by Farm Credit Corporation and the remainder mainly by Provincial Departments of Agriculture.¹

To be successful on a continuing basis a farm record system must provide effective management information in a form that is readily understood by farmers and by district agriculturists, agricultural representatives, credit advisors, bankers, and others with whom farmers work in solving managerial problems. This includes well organized information for filing tax returns, obtaining credit and for controlling cash flows. It also includes

details on the costs and returns for the entire farm and for particular enterprises on the farm. Additional pay-offs come from permanent records often required for historical purposes, such as substantiating income tax and capital gains tax returns, death duty positions, and farm transfer values. They can also be helpful in establishing contractual and rental arrangements. These reasons are likely to become more compelling in the future. The CANFARM Farm Record System assists farmers in meeting these needs by providing the recording and reporting service in a convenient and regular way.

SYSTEM STRUCTURE

Of course, not all farmers want the same degree of sophistication in their record system. To accommodate different levels of need, several "Options" have been designed. Option One is a simple system and its ability to produce detailed reports is limited. Option Two is more complex, but is capable of providing the farmer with much more information about his business. Within Option Two considerable flexibility exists by way of sub-options, or levels. For instance, under Option 2A the farmer registers a "Farm Account", a "Non-Farm Account", and a "Personal Account". If he wants more detail, especially about his farm, he may register under Option 2B, where he can subdivide his farm account into "Productive", "Service", and "Overhead" Accounts. Under Option 2C he can subdivide even further so that

¹A detailed treatment of the institutional arrangements under which CANFARM operates was given by K. James McKenzie in the February 1972 issue of *Canadian Farm Economics*. Provincial Departments of Agriculture and the Farm Credit Corporation are the major User Agencies.

*Dr. Bauer is Chief of CANFARM's Farm Record System. Prior to joining CANFARM, he studied for his Ph.D. at Oregon State University and worked with the Alberta Department of Agriculture.

“Productive Accounts” relate to specific enterprises, such as dairy, beef, or crops, and “Service Accounts” relate to specific categories such as machinery, buildings or construction. Under any of Options, 2A, 2B, or 2C he can elect to record physical quantities in addition to dollar amounts. The more sophisticated the level he selects within Option 2 (i.e., 2A, 2B, or 2C with or without physical quantities) the more detailed will be the reports he receives back and, of course, the more detailed will be the data recording requirements. Currently the system is being streamlined to meet, in addition to the needs expressed above, the even more complex needs of partnerships and farm corporations.

DATA RECORDING

In all options, farmers themselves record by means of codes, the basic data about individual sales, purchases, and other transactions occurring on their farms. Figure 1 illustrates a completed Farmer’s Journal Form, the most frequently used input document. Separate forms are available for recording inventory items, labour transactions, and for making transfers from one part of the business to another. Since the farmer does both the recording and coding himself there is less chance of the data processing system misinterpreting what he means and at the same time reduces operation costs. Of course, all farmers must use the code numbers supplied by CANFARM. For example, the item number 022 represents fertilizer, and the transaction code 2 indicates that a current purchase was made. This is necessary for the data to be collected uniformly and correctly, and for the reports to be accurate. Until the farmer has become skilled in the use of the Record System the contact agent² checks over his input forms before submitting them for processing. Once the basics of the system have been mastered, the farmer needs to spend only a few hours each month in recording data.

FARMERS’ REPORTS

The farmers’ reports are the principal end product of the Farm Record System. Two distinct groups of reports are produced – a monthly set and an annual set.

Monthly reports contain figures that indicate business activity for “This Month” and “Year-To-Date” totals, to show the accumulated activity so far “This Year”. These are designed to help the farmer maintain his records correctly during the year. Monthly reports also provide information which the farm manager may use to make

short-run or tactical decisions. However, the information is mostly descriptive in nature and makes no real attempt to diagnose problems or prescribe solutions.

Table 1 lists the monthly reports available under both Options 1 and 2. Figure 2 displays the Account Summary and Cash Balance Report. The Monthly (Income) Tax Management Report which is produced for the last four months of the fiscal year is shown in Figure 3. These two reports are particularly useful for short-run decisions.

Annual Reports are designed to provide a permanent record of the year’s operations for taxation and credit purposes as well as to furnish information for making intermediate and long-run managerial decisions. The information is partly descriptive and partly diagnostic in nature. The main task of diagnosing problem areas in the farm business and prescribing solutions is left to the farmer and his advisor(s).³ Table 2 lists the Annual Reports available under Option 1 or 2. Figures 4 and 5,

TABLE 1: MONTHLY REPORTS AVAILABLE

	OPTION 1	OPTION 2
Data Listback	Yes	Yes
Account (Enterprise) Reports	Yes	Yes
Account Summary and Cash Balance	Yes	Yes
Credit Account Report	Yes	Yes
Landlord Report	Yes	Yes
Payroll Record	No	Yes
Labour Allocation Report	No	Yes
(Income) Tax Management Report	No	Yes
Inventory Balance Report	No	Yes

TABLE 2: ANNUAL REPORTS AVAILABLE

	OPTION 1	OPTION 2
Farm Income Statement	Yes	Yes
Statement of Assets and Liabilities	Yes	Yes
Landlord Report	Yes	Yes
Credit Account Report	Yes	Yes
Summary of Farm Income by Account (Enterprise)	No	Yes
Analysis of (Enterprise) Account	No	Yes
Depreciation Schedule	No	Yes
Capital Cost Allowance Schedule	No	Yes
Statement of Farming Income and Expenses for (Income) Tax Purposes	No	Yes
Farm Income Analysis	No	Yes

²The contact agent is a representative of the User Agency. His function is to instruct and assist the farmer in properly understanding and using the system.

³The CANFARM Farm Business Analysis System and CANFARM’s Farm Planning System are being developed to assist in these tasks.

CAN-FARM CANADIAN FARM MANAGEMENT DATA SYSTEM		FARMER'S JOURNAL MONTHLY REPORT - OPTION 2		FARM ID NAME BELL JONES		MONTH APRIL 19 71		PAGE NO. THIS FORM THIS MONTH	
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IM03				CODE				PHYSICAL AMOUNTS				DOLLAR VALUE			
LINE NO.	DATE	DESCRIPTION	OWNER	TRANS.	ITEM NUMBER	ACCT. #	UNIT	QUANTITY	HEAD ACRES	FERT ANALYSIS	TOTAL AMOUNT FOR THIS MONTH	CREDIT ACCT. NO.	CREDIT AMOUNT		
1		SOLD 150 BUSHELS OF SEED OATS AT \$1.60 PER BUSHEL ON THE FIFTH OF APRIL (FARM ACCT. #1)													
2		8 SOLD SEED OATS			137470	1		150 BUS			240 00				
3															
4		PURCHASED \$17.31 WORTH OF HARDWARE ON THE SEVENTH OF APRIL AND PAID WITH CHEQUE NUMBER 49 (ACCT. #1)													
5		49 7 HARDWARE			2333	1					17 31				
6															
7		PURCHASED 50 GALLONS OF DIESEL FUEL AT 25¢/GAL ON THE EIGHTH OF APRIL. CHARGED THE FUEL TO HIS													
8		CREDIT ACCOUNT P05 (ACCT. #1)													
9		8 50 GAL. DIESEL FUEL			2003	1		50 GAL			12 50 P05				
10															
11		PURCHASED 3 TON OF 051030 FERTILIZER AT \$55.00/TON ON THE TENTH OF APRIL (ACCT. #1)													
12		10 3 Ton 5/10/10 FERTILIZER			2022	1		6000 LBS	10 10		165 00				
13															
14		SOLD A USED DISC ON THE 16TH OF APRIL FOR \$400.00 (ACCT. #1)													
15		16 OLD DISC			3792	1					400 00				
16		ON THE 20TH OF APRIL, PURCHASED A NEW GRAIN DRILL WORTH \$1100.00. (ACCT. #1)													
17		20 GRAIN DRILL			4772	1					1100 00				
18		ON THE 24TH OF APRIL, SOLD ONE BULL FOR \$450.00 TO BILL PARK. THE SALE WAS ON CREDIT. HENCE, CREDIT													
19		ACCT. R03 IS ESTABLISHED. (ACCT. #1)													
20		21			1532	1					450 00	R03	450 00		

IM04		LIST OF NEW CREDIT ACCOUNTS		IM17		END OF MONTH CASH STATEMENT	
NAME OF NEW CREDIT ACCOUNT (PLEASE PRINT)	NEW CREDIT ACCOUNT NUMBER	CASH ON HAND	CASH IN BANK	CHEQUES ON HAND	TOTAL	LESS CHEQUES OUTSTANDING	TOTAL - ALL CASH AVAILABLE
B. PARK	R03	27 29	433 18	460 68	460 68	33 80	426 88

SUBJECT

PAGE

ACCOUNT SUMMARY AND CASH BALANCE

NAME

JONES BILL C.

REGISTERED FARMER

MONTH

YEAR

PAGE

1

**** SUMMARY OF SALES ****

FARM BUSINESS	THIS MONTH	TO DATE
1 FEEDER CATTLE	22,702.60	37,702.60
2 COW-CALF	300.00	710.00
3 SMALL GRAINS	4,772.50	4,772.50
4 HAY AND PASTURE	100.00	500.00
5 POTATOES	1,495.00	8,653.30
6 CUSTOM WORK	935.00	3,915.00
CURRENT FARM SALES	25,532.60*	56,253.40*
PERSONAL		
16 PERSONAL	145.30	145.30
PERSONAL SALES	145.30*	
CAPITAL SALES		
8 COMBINE		
10 MACHINERY GENERAL	1,228.50	3,200.00
15 OVERHEAD	2,500.00	3,228.50
CAPITAL SALES	3,728.50*	6,928.50*
TOTAL SALES	29,261.10**	63,327.20**
LESS : SOLD ON CREDIT	3,070.00	3,070.00
PLUS: AMOUNT BORROWED	2,000.00	6,900.00
RECEIVED ON ACCOUNT	500.00	1,000.00
EQUAL: TOTAL CASH INFLOW	28,691.10	68,357.20

**** CASH BALANCE ****

TOTAL CASH INFLOW LESS TOTAL CASH OUTFLOW	
PLUS: BEGINNING CASH AVAILABLE	
EQUAL: CALCULATED ENDING CASH AVAILABLE	
REPORTED ENDING CASH AVAILABLE	
DISCREPANCY BETWEEN CALCULATED AND REPORTED CASH	

**** SUMMARY OF PURCHASES ****

FARM BUSINESS	THIS MONTH	TO DATE
1 FEEDER CATTLE	380.25	1,999.23
2 COW-CALF	4.25	321.60
3 SMALL GRAINS	32.75	1,756.18
4 HAY AND PASTURE	360.00	3,115.32
5 POTATOES	250.00	105.00
6 CUSTOM WORK	82.50	2,202.50
7 HOLDING	20.00	402.65
8 COMBINE EQUIPMENT	38.46	322.02
10 MACHINERY GENERAL	118.00	1,296.48
11 LABOUR	548.40	5,008.65
12 CAR	124.00	796.50
13 BUILDINGS-IMPROVMENTS	142.58	934.18
15 OVERHEAD	744.74	5,327.34
CURRENT FARM PURCHASES	2,845.93*	24,037.41*
PERSONAL		
16 PERSONAL	325.00	5,311.94
PERSONAL PURCHASES	325.00*	
CAPITAL PURCHASES		
8 COMBINE		
10 MACHINERY GENERAL	4,470.00	8,000.00
14 CONSTRUCTION	50.00	4,720.00
15 OVERHEAD		1,350.94
CAPITAL PURCHASES	4,520.00*	19,090.94*
TOTAL PURCHASES	7,690.93**	48,440.29**
LESS : AMOUNT CHARGED	107.50	8,050.90
PLUS: AMOUNT LOANED OUT	0.00	2,000.00
AMOUNT PAID OFF	9,818.69	23,892.81
EQUAL: TOTAL CASH OUTFLOW	17,402.12	66,282.20

JAN 1 - SEP 30 OCT 1 - OCT 31

- 9,413.98	11,288.98
11,561.55	2,147.57
2,147.57	13,436.55
2,147.57	13,436.55
+ 0.00	+ 0.00

FIGURE 2

CAN FARM

UNIT NAME
0122 0175

CANADIAN FARM MANAGEMENT DATA SYSTEM - SYSTEME CANADIEN DE GESTION AGRICOLE

FARM TAX MANAGEMENT REPORT (CASH BASIS) FOR THE FIRST 30 MONTHS
OF THE PERIOD JAN 1, 1971 TO DEC 31, 1971

JONES BILL C.

RECEIPT NO.	MONTH	YEAR	PAGE
123467	2	OCTOBER 1971	2

**** EXPENSES ****

SUBJECT	\$	\$
CURRENT FARM PURCHASES		
SALT	52.25	
MINERAL SUPPLEMENTS	87.65	
BEEF SUPPLEMENTS	914.00	
OATS	100.00	
SEED BARLEY	292.50	
MIXED GRAIN	136.75	
FEED AND STRAW		1,645.70*
GRASS SEED	235.00	
SEEDS AND PLANTS		235.00*
FERT-DRY OR GRANULAR	2,315.00	
ANYHDROUS AMMONIA	235.00	
SPRAYS	176.65	
INSECTICIDE-SPRAY	158.00	
FUNGICIDE-SPRAY	127.85	
INSULIDES-DUST	27.50	
FERTILIZERS-SPRAYS,OTHER CHEMICALS		3,040.00*
TWINE	159.48	
CONTAINERS AND TWINE		159.48*
SEED TREATING	72.00	
CUSTOM SPRAYING	250.00	
HAULING & TRUCKING	285.00	
CUSTOM WORK		607.00*
HYDRO ELECTRICITY	294.50	
TELEPHONE	109.17	
TELEPHONE, LIGHT, POWER		403.67*
LIVESTOCK SUPPLIES	358.91	
CROP SUPPLIES	92.65	
OTHER MARKTG CHARGES	484.75	
ADVERTISING	18.00	
GENERAL FARM INSUR.	125.44	
ACCOUNTANT SERVICES	50.00	
OFFICE SUPPLIES	35.20	
MAGAZINES & PERIOD	22.30	
YARD MAINT & REPAIR	105.00	
CONSTRUCTN MATERIAL	37.33	
ELECTRICAL MATERIAL	48.85	
PLUMBING MATERIAL	73.00	
PAINT	42.45	
PAIGE WIRE	35.44	
BARBED WIRE	45.80	
HARDWARE	44.00	
MISCELLANEOUS	154.78	
SEED POTATOES	1,250.00	
CONTRACT LABOUR		1,250.00
CASH LABOR ADVANCE	100.00	
SERVICE CHARGES	23.80	
DUES AND FEES	60.00	
OTHER EXPENSES		3,315.66*
TOTAL CURRENT FARM PURCHASES (ACCRUED)		24,037.41**
PLUS FARM CHARGE ACCOUNTS PAYABLE (JAN 1/71)		1,510.12
LESS FARM CHARGE ACCOUNTS PAYABLE (OCT 31/71)		2,515.76
TOTAL CURRENT FARM PURCHASES (CASH)		23,031.77

FIGURE 3

***** EXPENSES *****		***** INCOME *****	
CURRENT FARM PURCHASES	\$	CURRENT FARM SALES	\$
UNEMPLOYMENT INS	91.20	SEED BARLEY	4,372.50
EMPLOYEE INCOME TAX	230.00	CROPS AND SEEDS - BARLEY	4,372.50
PAYMT OF BACK WAGES	133.80	BEDDING STRAW	400.00
OTHER DEDUCTION NO 1	67.50	CROPS AND SEEDS - OTHER	400.00
CASH LABOUR PAYMENT	57.00	HAY	500.00
SALARIES AND WAGES	4,071.90	FORAGE CROPS	500.00
GOVERNMT PENSION PLAN	153.25	COWS	410.00
C.P.P. CONTRIBUTIONS FOR EMPLOYEES	104.00	FINISHED CATTLE	37,702.60
WORKMEN'S COMPENSATION	20.00	LIVESTOCK - CATTLE	38,112.60
MACHINERY RENTAL	2,340.00	POTATOES	900.00
RENT OPER CAPTL	1,676.63	FIELD CROPS	7,753.30
INTEREST FIXED CAPTL	548.80	VEGETABLES	8,653.30
REAL ESTATE TAXES	120.00	CUSTOM SPRAYING	420.00
TAXES (EXCEPT INCOME TAXES)	47.80	CUSTOM COMBINING	2,020.00
CROP INSURANCE	224.60	CUSTOM VEG HARVEST	1,275.00
LIVESTOCK INSURANCE	179.50	CUSTOM SNOW REMOVAL	200.00
INSURANCE-BUILDINGS,CROPS,LVSTK	57.00	CUSTOM WORK	3,915.00
HOUSE MAINT & REPAIR	57.00	LIVESTOCK INSURANCE	300.00
FARM BLDG MAINT & RP	1,227.40	INSURANCE PROCEEDS (CROP OR LVSTK)	300.00
BUILDING REPAIRS	200.00	TOTAL	56,253.40
FENCE MAINT & REPAIR	105.00	PLUS FARM CHARGE ACCOUNTS RECEIVABLE (JAN 1/71)	500.00
FENCE REPAIRS	95.00	LESS FARM CHARGE ACCOUNTS RECEIVABLE (OCT 31/71)	2,070.00
GASOLINE	58.50	TOTAL CURRENT FARM SALES (CASH)	54,683.40
DIESEL FUEL	62.00	LESS TOTAL CURRENT FARM PURCHASES (CASH)	23,031.77
OIL	398.02	EXCESS OF FARM SALES OVER FARM PURCHASES	31,651.63
GREASE	235.00	***** FARMER'S ADJUSTMENT TO ANNUAL BASIS *****	
LUBRICATION SERVICES	312.35	PLUS ESTIMATED CASH INCOME FOR REST OF YEAR	-----
MACHINERY AND TRUCK - GAS AND OIL	463.25	LESS ESTIMATED CASH EXPENSES FOR REST OF YEAR	-----
TRUCK INSURANCE	328.13	LESS ESTIMATED CAPITAL COST ALLOWANCE FOR YEAR	-----
MACH MAINT & REPAIR	49.50	EST. EXCESS OF INCOME OVER EXPENSES FOR YEAR	-----*
TRACTOR MAINT+REPAIR	47.50		
MACHINERY PARTS	23.80		
TIRES	20.00		
PULLEYS	18.35		
GEARS	81.00		
BELTS	38.95		
SPARK PLUGS	124.00		
BATTERY	35.00		
TRUCK LICENCE	72.00		
MACHINERY AND TRUCK-REPAIR,LIC,INS	2,052.85		
CAR MAINT & REPAIR	38.95		
AUTOMOBILE - GAS AND OIL	38.95		
CAR INSURANCE	124.00		
CAR LICENCE	35.00		
CAR PARTS	72.00		
AUTOMOBILE-REPAIRS,LIC,INS	231.00		
VET SUPPLIES	294.22		
VET SERVICES	155.00		
VETERINARY, MEDICINE, BREEDING	449.22		

NOTE: CANFARM IS RESPONSIBLE ONLY FOR THE ARITHMETIC ACCURACY OF THIS REPORT.

FIGURE 3 (cont'd)

CANADIAN FARM MANAGEMENT DATA SYSTEM - SYSTÈME CANADIEN DE GESTION AGRICOLE		ANNUAL REPORT RUN # 1		NAME: JONES BILL C.	
FARM INCOME STATEMENT		DATE ISSUED: JANUARY 10, 1972		RESIDENT NO. (NOMINÉMENT):	
FOR THE PERIOD JAN 1, 1971 TO DEC 31, 1971				YEAR MADE: 1	
SUBJECT: FARM INCOME STATEMENT				123467 -- 2	
SUBT: FOR THE PERIOD JAN 1, 1971 TO DEC 31, 1971					

**** SUMMARY OF NET FARM INCOME BY VALUE OF PRODUCTION ****

	(\$)
CROP SALES	13,926
LIVESTOCK SALES	80,586
MISCELLANEOUS SALES	4,215
TOTAL CURRENT FARM SALES	98,726
PLUS : CROPS, LVSTK & LVSTK PRODUCTS TRANSFERRED TO PERSONAL AND NON-FARM ACCOUNTS	350
PLUS : CROP INVENTORY CHANGE	+4,585
PLUS : LIVESTOCK INVENTORY CHANGE	-14,850
EQUALS : GROSS FARM INCOME	88,741
LESS : CROPS PURCHASED	2,076
LESS : LIVESTOCK PURCHASED	31,396
EQUALS : VALUE OF FARM PRODUCTION	55,269
LESS : SUPPLIES AND SERVICES PURCHASED	19,456
LESS : LABOR	5,970
LESS : MISCELLANEOUS PURCHASES	7,735
PLUS : SUPPLY INVENTORY CHANGE	+ 2,859
LESS : SUPPLY AND SERVICE TRANSFERS FROM PERSONAL AND NON-FARM ACCOUNTS	235
PLUS : SUPPLY AND SERVICE TRANSFERS TO PERSONAL AND NON-FARM ACCOUNTS	1,149
LESS : DEPRECIATION	12,672
EQUALS : NET FARM INCOME	13,208

**** SUMMARY OF FARM INCOME ****

PLUS : CURRENT FARM SALES LESS CURRENT FARM PURCHASES	32,093
INVENTORY CHANGE (ENDING LESS BEGINNING)	- 7,477
SUB TOTAL	24,616
PLUS : VALUE OF SALEABLE FARM PRODUCTS USED IN HOME AND/OR NON-FARM BUSINESS	1,499
LESS : VALUE OF NON-FARM AND PERSONAL PRODUCTS OR SERVICES USED ON FARM	235
LESS : DEPRECIATION	12,672
EQUAL : NET FARM INCOME (RETURNS TO EQUITY CAPITAL, MANAGEMENT, AND UNPAID LABOR)	13,208

FIGURE 4

CanFarm <small>UNIT 0708 REV. 0778</small>		CANADIAN FARM MANAGEMENT DATA SYSTEM <small>SUBJECT: FARM</small>		SYSTÈME CANADIEN DE GESTION AGRICOLE <small>SUBJECT: FARM</small>		ANNUAL REPORT DATE ISSUED: JANUARY 10, 1978 RUN # 1 JONES BILL C.		123467-- 2 <small>MONTH: MAY</small>		2	
**** CURRENT FARM SALES AND PURCHASES ****											
(\$)											
CURRENT FARM SALES											
CROP SALES											
SEED BARLEY 4,373											
HAY 500											
BEDDING STRAW 400											
POTATOES 900											
FIELD RUN POTATOES 7,753											
SUB TOTAL 13,926*											
LIVESTOCK SALES											
COMS 866											
FINISHED CATTLE 79,719											
SUB TOTAL 80,586 *											
MISCELLANEOUS SALES											
LIVESTOCK INSURANCE 300											
CUSTOM SPRAYING 420											
CUSTOM COMBINING 2,020											
CUSTOM VEG HARVEST 3,276											
CUSTOM SNOW REMOVAL 200											
SUB TOTAL 4,215*											
TOTAL CURRENT FARM SALES 98,726**											
CURRENT FARM PURCHASES											
CROP PURCHASES											
OATS 160											
SEED BARLEY 293											
MIXED GRAIN 139											
GRASS SEED 235											
SEED POTATOES 1,250											
SUB TOTAL 2,076*											
LIVESTOCK PURCHASES											
COMS 1,500											
FEEDER CATTLE 29,896											
SUB TOTAL 31,396*											
SUPPLIES AND SERVICES											
FERTILIZER 4,965											
ANHYDROUS AMMONIA 235											
GASOLINE 1,403											
DIESEL FUEL 298											
OIL 113											
GREASE 106											
LUBRICATION SERVICES 81											
SPRAYS 220											
INSECTICIDE-SPRAY 158											
FUNGICIDE-SPRAY 128											
INSECTICIDES-DUST 28											
LIVESTOCK SUPPLIES 248											

CANADIAN FARM MANAGEMENT DATA SYSTEM - SYSTEME CANADIEN DE GESTION AGRICOLE		ANNUAL REPORT RUN # 1		JONES BILL C.	
FARM INCOME STATEMENT		DATE ISSUED: JANUARY 10, 1972		REGISTERED WORKSHEET	
FOR THE PERIOD JAN 1, 1971 TO DEC 31, 1971				MONTH NOS	
SUBJECT				123467 -- 2	
SHEET				YEAR AMOUNT	
				3	

CURRENT FARM PURCHASES (CONT'D)

	(\$)
VET SUPPLIES	508
VET SUPPLIES	340
CROP SUPPLIES	93
TWINE	159
SEED TREATING	72
SALT	81
MINERAL SUPPLEMENTS	128
BEEF SUPPLEMENTS	1,753
OTHER MARKTG CHARGES	1,753
ADVERTISING	22
TRUCK INSURANCE	22
CROP INSURANCE	120
HYDRO ELECTRICITY	80
TELEPHONE	357
MACHINERY RENTAL	141
GENERAL FARM INSUR.	20
ACCOUNTING SERVICES	251
FARM RECORD SERVICES	50
OFFICE SUPPLIES	45
MAGAZINES & PERIOD	50
CUSTOM SPRAYING	37
HAULING & TRUCKING	250
YARD MAINT & REPAIR	1,780
HOUSE MAINT & REPAIR	179
FARM BLDG MAINT & RP	380
FENCE MAINT & REPAIR	414
CONSTRUCTN MATERIAL	57
ELECTRICAL MATERIAL	37
PLUMBING MATERIAL	49
PAINT	106
PAIGE WIRE	42
BARBED WIRE	93
MACH MAINT & REPAIR	46
TRACTOR MAINT & REPAIR	613
MACHINERY PARTS	235
TIRES	378
PULLEYS	329
GEARS	548
BELTS	50
BATTERY	24
HARDWARE	10
CAR INSURANCE	15
CAR LICENSE	68
CAR MAINT & REPAIR	124
CAR PARTS	70
MISCELLANEOUS	51
SUB TOTAL	91
	252
	19,456 *

FIGURE 4 (cont'd)

CAN FARM	CANADIAN FARM MANAGEMENT DATA SYSTEM		SYSTÈME CANADIEN DE GESTION AGRICOLE		ANNUAL REPORT RUN # 1		JONES BILL C.		YEAR INQUIRY		PAGE	
	SUBJECT		FARM INCOME STATEMENT		DATE ISSUED: JANUARY 10, 1972		REGISTER NO. W-100000000		MONTH INQUIRY			
	FOR THE PERIOD JAN 1, 1971 TO DEC 31, 1971						123467 -- 2		4			

CURRENT FARM PURCHASES (CONT'D)		(\$)
LABOR		
GOVERNMT PENSION PLAN		189
UNEMPLOYMENT INS		112
EMPLOYEE INCOME TAX		276
WORKMEN'S COMPENSATION		104
PAYM'T OF BACK WAGES		134
CONTRACT LABOUR		250
CASH LABOR ADVANCE		100
OTHER DEDUCTION NO 1		90
OTHER DEDUCTION NO 2		57
CASH LABOUR PAYMENT		4,659
SUB TOTAL		5,970 *
MISCELLANEOUS		
INTEREST OPER CAPTL		3,155
INTEREST FIXED CAPTL		3,825
SERVICE CHARGES		40
DUES AND FEES		85
REAL ESTATE TAXES		549
TRUCK LICENCE		81
SUB TOTAL		7,735 *
TOTAL CURRENT FARM PURCHASES		66,634 **

FIGURE 4 (cont'd)

CAN-FARM		CANADIAN FARM MANAGEMENT DATA SYSTEM		SYSTEME CANADIEN DE GESTION AGRICOLE		ANNUAL REPORT RUN # 1		JONES BILL C.	
STATEMENT OF ASSETS AND LIABILITIES (WITH ASSETS AT MARKET VALUE)		DATE ISSUED: JANUARY 10, 1972		REGISTER NO. WATERLOO		MONTHLY INDEX		YEAR MARKET	
FOR THE PERIOD JAN 1, 1971 TO DEC 31, 1971				123467 -- 2				PAGE 1	

	JAN 1/71 (\$)	(%)	DEC 31/71 (\$)	(%)	CHANGE (\$)
**** OPERATOR'S FARM BUSINESS ****					
ASSETS:					
CASH	11,562		12,904		+ 1,343
LABOUR RECEIVABLES	0		0		+ 0
CHARGE ACCOUNTS RECEIVABLE	500		0		- 500
FEED, CROPS, AND SUPPLIES	10,285		17,659		+ 7,374
LIVESTOCK	65,100		50,250		- 14,850
CURRENT ASSETS	87,447*	42.6	80,813*	38.9	- 6,634*
MACHINERY AND EQUIPMENT	32,600		36,951		+ 4,351
REAL ESTATE	85,000		90,000		+ 5,000
FIXED ASSETS	117,600*	57.4	126,951*	61.1	+ 9,351*
LOANS, NOTES, AND MORTGAGES RECEIVABLE	0		0		+ 0
MISCELLANEOUS ASSETS	0		0		+ 0
OTHER ASSETS	0*	0.0	0*	0.0	+ 0
TOTAL ASSETS	205,047**	100.0	207,764**	100.0	+ 2,717**
LIABILITIES:					
LABOUR PAYABLES	0		0		+ 0
CHARGE ACCOUNTS PAYABLE	1,510		1,147		- 363
LOANS, NOTES, AND MORTGAGES PAYABLE	81,166		78,473		- 2,692
TOTAL LIABILITIES	82,676**	40.3	79,620**	38.8	- 3,056**
EQUITY IN FARM BUSINESS (A)	122,371	59.7	128,144	61.2	+ 5,773
**** NON-FARM BUSINESS ****					
(NO NON-FARM INVENTORIES RECORDED) (B)					
**** PERSONAL ****					
ASSETS:					
PERSONAL RECEIVABLES	1,000		7,000		+ 6,000
SUPPLIES	0		0		+ 0
MACHINERY AND EQUIPMENT	0		0		+ 0
REAL ESTATE	0		0		+ 0
OTHER ASSETS	7,000		0		- 7,000
TOTAL ASSETS	8,000**	100.0	6,600	100.0	- 1,400
LIABILITIES:					
TOTAL LIABILITIES	123**	1.5	0**	0.0	- 123**
PERSONAL EQUITY (C)	7,877	98.5	13,600	100.0	+ 5,723
OPERATOR'S NET WORTH (A + B + C)	130,248		141,744		+ 11,496
LANDLORD'S ASSETS	20,000		20,000		+ 0

respectively, display the Farm Income Statement and Statement of Assets and Liabilities, the two basic statements of the Annual Report set. During the year he keeps his reports and copies of his input forms in a special loose leaf binder. At year-end he transfers the reports and data he wants to keep as a permanent record to a more permanent form of storage.

All Monthly and Annual Reports are produced in triplicate. The original is sent to the farmer, the second copy goes to the farmer's contact agent, and the third one goes to the enrolling User Agency's central office. In order to accommodate a variety of special needs and situations among farmers, several logistical alternatives have been created. For example, farmers can select any 12 month period to be their fiscal year as long as it begins on the first of a month. A farmer can elect to receive that group of monthly and annual reports he considers useful for his particular operation. Also, in the event that they have made errors they may amend their original data submissions thus correcting both monthly and annual reports. Farmers may submit data several times per month. Each separate submission of data will generate a new set of monthly reports but each set after the first is regarded as a "re-run" and "This-Month" columns contain all data pertaining to that month. This enables a farmer to obtain accurate reports for each month even though he may have made several errors on his first data submission.

The monthly reports are produced a few days after the receipt of the farmer's monthly data in CANFARM's Regional Office. CANFARM is geared up to produce and mail out reports no later than 13 days after the data is received. Often, especially during summer months, turnaround time is considerably faster. Thus, farmers who submit their data on time for one month receive their reports before it is necessary to submit the next set of data. Timely reports are considered to be a key feature of the Farm Records System and efforts are being made to reduce the effective "turnaround" time for the farmer even further. Annual reports are produced when 12th month data and closing inventories are submitted. Once the first set of annual reports has been produced it is still possible to make corrections. Of course, data changes will affect both monthly and annual reports hence both will be re-run. The facility for making corrections to a given year's data remains open for 100 days after the close of the fiscal year, after which no more corrections are possible.

Although the primary objective of the CANFARM Farm Record System is to provide useful information for individual farmer decision-making, the data have secondary uses in providing information for deriving business standards through comparative groupings, and in fulfilling some data needs in Farm Management Research. These secondary uses of the Farm Record System will be discussed in succeeding articles.

MICHIGAN'S PURPLE PLUMS AFFECT CANADIAN MARKET

Ontario markets can expect more Michigan fresh plums at prices below recent years. Western markets will encounter more competition from northwestern U.S. growers. More canned U.S. plums will be sold in all major Canadian cities.

Purple plums are the purple skinned varieties such as Italian and Stanley (including Blufre) grown mainly in Michigan and the northwest states. A few are grown in New York, Pennsylvania and New Jersey. They differ from the plums or plum prunes grown in California and parts of Oregon which have the high sugar content necessary to produce prunes. In Canada purple plums are grown mostly in Ontario and British Columbia with a few in Nova Scotia. Purple plums are usually sold as fresh fruit and as canned whole plums.

In 1971, an increase in the supply of purple plums in the United States resulted in sharply reduced prices. For example, in Michigan, growers were accepting \$40.00 per ton (although the average season price was \$52.30) if they could find a processor to buy their plums. This price of \$40.00 per ton was \$7.90 lower than the previous low of \$47.90 - in 1948 - and \$32.60 per ton lower than the five year average price of \$72.60 received from 1965 to 1969 (1970 was a short crop year with an unusual price of \$104.00 per ton). A similar drop in prices occurred in the other major purple plum producing states of Washington, Oregon and Idaho.

Faced with extremely low domestic prices and a heavy supply, the U.S. industry is, and will be, actively seeking foreign markets. While the canned product may be transported great distances, the fresh product deteriorates very quickly and requires a nearby market. This nearby market is Canada, where a small purple plum industry currently enjoys very attractive prices.

The intent in this article is to review the impact of a short run supply increase of purple plums in Michigan on the U.S. industry, on the Ontario plum industry and ultimately on the Canadian plum industry.

*Dr. Anderson joined the Branch last July, after completing his Ph.D. at Michigan State University. Dr. Anderson's thesis was a study of Michigan's purple plum industry.



R.W. Anderson *

United States Purple Plum Industry

Production

Until the early 1960's, Michigan's production was about 8,000 or fewer tons per year. This production level was, in most years, far below that of the three other major producing states (Table 1). Production of 9,000 tons in 1961 was the first indication of Michigan's supply increase. This was followed in 1963 with 10,500 tons and quickly accelerated to 15,000 tons by 1967 - approximately 2.4 times the average production of the 1950's. Although production levelled off in 1968 and 1969 and dropped in 1970, expectations are that Michigan production will increase significantly in the 1970's (1971 production was 18,500 tons). Meanwhile, production was also increasing in the Northwest.

Two methods were used to estimate Michigan's expected production to 1975. One method was based on historical production, while the second method is based on the maturity levels of trees and the average yield expected from trees of various ages. Both methods require a number of assumptions for such variables as weather, disease, tree removal, and "green drop". Weather extremes are generally excluded, although a production estimate based on historical supply usually includes a weather factor. A similar situation exists with disease problems such as a heavy infestation of the black knot disease. Here the use of historical data is assumed to include the effects of disease. Supply projection further assumes that neither a tree removal nor a "green drop" (removal of fruit prior to ripening) program occurs in

MAJOR PLUM AND PURPLE PLUM PRODUCING AREAS IN ONTARIO AND MICHIGAN

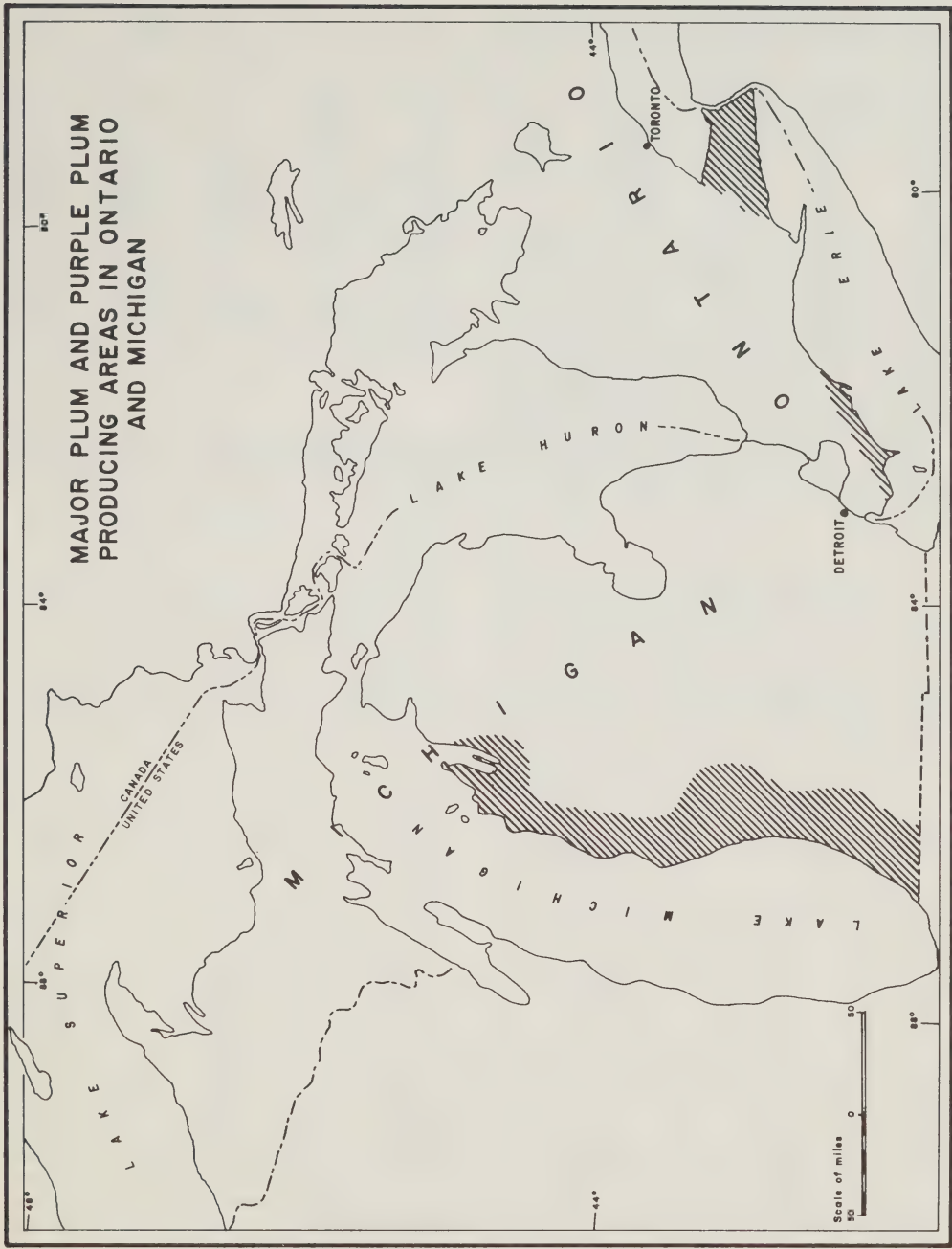


TABLE 1: PRODUCTION OF PURPLE PLUMS IN THE UNITED STATES 1960 – 1971

Year	Michigan		Idaho		Oregon ¹		Washington		U.S. ² (all)
	Fresh	Canned	Fresh	Canned	Fresh	Canned	Fresh	Canned	
	tons								
1960	3,460	4,220	10,370	³	1,050	1,500	7,870	1,705	32,700
1961	4,300	4,350	16,685	3,500	3,280	12,620	11,800	5,900	76,000
1962	3,530	4,270	13,860	2,570	5,800	22,300	13,450	5,800	92,100
1963	3,600	6,340	12,285	6,490	5,000	265	8,150	6,760	51,900
1964	6,550	7,135	6,501	5,133	9,150	8,100	13,950	7,200	84,300
1965	4,100	6,835	16,071	4,133	5,700	14,600	8,900	3,600	74,200
1966	5,000	7,050	10,660	na	2,200	14,400	13,600	2,560	66,200
1967	4,600	9,250	12,803	3,279	6,650	14,300	8,100	3,000	74,700
1968	3,000	8,825	3,740	2,670	9,760	800	6,900	2,700	44,000
1969	5,200	8,480	13,600	3,820	1,580	19,200	18,000	9,000	89,500
1970	4,800	5,000	6,700	410	7,000	13,200	7,550	1,700	46,850
1971 ⁴	6,700	11,800	11,520	1,280	3,600	7,600	10,960	4,540	58,000

¹ Weather conditions in Oregon result in wide annual production differences.

² Includes small quantities from a number of other states.

³ Included with fresh sales to avoid disclosure of individual operations.

⁴ In 1971, unusually large quantities were not harvested in the following states: Michigan 5,000 tons, Idaho 5,130 tons, and Oregon 11,200 tons. In addition, Oregon (usually dries less than 2000 tons) in 1971 dried 5,500 tons. If these quantities of unharvested and dried plums are added to the quantity sold for fresh and canning purposes total production in 1971 would be 86,900 tons (excess cullage was 2,070).

na: Not available.

SOURCE: Fruits, Part 1 Noncitrus by States – Production Use and Value SRS, U.S.D.A.

the projected period. Both of these are justified on the grounds that tree removal during 1972-75, when Michigan's orchards are just reaching maturity, would

result in a loss of grower investments. A "green drop" program usually requires an organized supply management program which, at present, is non-existent.

TABLE 2: MICHIGAN PURPLE PLUM GROWER PRICES, CANADIAN AVERAGE FARM PLUM VALUES, CANADIAN DOMESTIC DISAPPEARANCE OF CANNED PLUMS, AND CANADIAN FRESH PLUM IMPORTS, 1958 – 1971

Crop Year	Michigan		Canadian Average Farm Value	Can. Domestic Disappearance of Canned Plums	Canadian Imports (Fresh Plums) ¹
	Fresh Mkt. Price	Process Mkt. Price			
	\$ per ton	\$ per ton	\$ per ton	'000 lb.	'000 lb.
1958	105.00	63.00	74.00	9,843	4,895
1959	110.00	82.00	66.00	8,727	3,756
1960	155.00	119.00	83.00	7,374	14,833
1961	124.00	81.00	87.00	9,669	14,729
1962	134.00	81.00	85.00	8,546	12,424
1963	145.00	99.00	82.00	8,910	14,635
1964	92.00	50.00	70.00	8,715	16,664
1965	143.00	75.00	96.00	7,136	18,441
1966	130.00	68.00	100.00	8,378	19,096
1967	142.00	71.00	116.00	9,894	20,391
1968	174.00	87.00	156.00	7,850	25,892
1969	113.00	62.00	166.00	7,979	22,378
1970	150.00	104.00	164.00	6,213	30,183
1971	106.00	52.30	²	n.a.	26,801

¹ Imports of canned purple plums are not published separately from other canned imports

² Indications are that prices will be similar to those in 1970 with purple plum prices in Ontario reported at \$150. per ton.

SOURCE: Col. 1 & 2 – Noncitrus Fruit Prices by States and United States Crop Reporting Board, SRS, U.S.D.A.

Col. 3, 4, & 5-Statistics Canada

The two methods used for estimating future production were as follows:¹

A. Historical Production Method.

Using historical data, 1964 was selected as a base year when 375,000 bearing trees were recorded. This year was selected because the previous year's production and the following year's production were approximately average, no unusual weather conditions prevailed and a recommendation by selected crop reporting people familiar with purple plum production in Michigan. An index was created by expressing the number of bearing trees in each year as a percent of those bearing in 1964. This index was multiplied by the average annual production for the period 1962-67, which was 12,083 tons. Average production was used to allow for some weather variation and an increase in production as the trees mature.

B. Maturity Level Method.

This method uses a "maturity scale" which indicates the expected percent of mature yield per acre in each year after planting. For example, a four year old plum tree, just beginning to bear fruit, can be expected to yield ten percent of its fully mature potential.² This maturity scale was used assuming a mature production level of six tons per acre.³ A twenty year life period was used to estimate each year's production. Trees twelve years or older were assumed to be fully mature, bearing at the rate of six tons per acre. As each new year was added, the twenty year old trees were dropped. In some cases, orchards live longer than twenty years but horticultural sources indicate that twenty years is an average life span.

Results using the historical method, indicate that total production in Michigan could reach at least 21,000 tons per year for both 1972 and 1973 and according to the maturity method, possibly reach 39,000 tons by 1975.⁴ Although the 18,500 ton yield in 1971 represented a new high, the minimum estimate of 21,000 tons can be expected despite producer responses to low prices in 1971 and possibly in 1972. If growers stopped pruning, spraying and general maintenance, production would certainly decline despite the fact that approximately two-thirds of the 600,000 bearing trees are just approaching maturity and increasing in yield per tree. However, if growers chose to do this the savings per acre in variable costs are low and the risk high.⁴ If an orchard is not pruned and sprayed, disease will permanently damage the orchard thus reducing its potential produc-

tion in years when prices might be higher. As for orchard removal, growers are not likely to remove their orchards because two-thirds of the Michigan orchards are just beginning production which means investment is high, returns to date nil and salvage value zero or negative. In addition most growers have other fruit crops and may depend on these for income in the short run. Consequently for the next two or three years, it is expected that producers will maintain their orchards.

One of the many physical factors that often affect tree fruit production, is the production level of the previous year. If the previous year had a small crop, the trees are presumed to be in better condition with more reserves for a bigger crop and *vice versa*. In Michigan, 1971 was a big crop year following a very low crop year and this might mean a smaller 1972 crop if this cycle holds (Michigan's purple plum production seems less affected by this factor than is production in other states). However, even if the cycle holds, the increased yield per tree resulting from newly matured trees is expected to overcome any cyclical production affect and push the 1972 production close to if not above the 21,000 ton level.

Pricing

Ordinary least squares regression analysis was used in an effort to determine to what extent current supply affects purple plum prices and to determine what other factors affect prices. Most growers in Michigan must commit themselves either to the fresh or the process market. The fresh market requires additional size, detailed spraying, and early picking, usually hand picking. On the other hand, the process market demands smaller well ripened plums that can be mechanically harvested. Because of the existence of the two markets, two mathematical equations were derived for Michigan grower prices. One equation was also generated for the significant factors affecting the f.o.b. price of canned choice whole purple plums in the Northwest. Because the Northwest has supplied a major portion of the canned market it was assumed that Northwestern f.o.b. prices represent U.S. f.o.b. prices.

The hypotheses underlying the model were as follows: Michigan's total production was expected to vary inversely with prices. A similar response was expected from changes in both U.S. and Northwestern total

¹Numerical examples of each method appear in the notes at the end of the article.

²Ricks, D.J., R.P. Larsen, and R.G. Wheeler, *Inputs and Relative Yields for Young Orchards*, Cooperative Extension Service, Fact Sheet for Michigan Agriculture, January 1961.

³A mature yield of 6 tons was used after talking with growers and extension people. One cost study in the state suggested a 7 ton per acre yield for high standard mature trees. However, the 6 ton value may be more reliable for all mature trees, and if a little low, it may compensate somewhat for unrecorded tree removals.

⁴Anderson, Robert W. "Michigan's Purple Plum Industry" Unpublished Ph.D. thesis, Michigan State University, 1972 Chapter III.

production and fresh production. On the demand side, changes in the U.S. population were expected to show a direct relationship with Michigan's grower prices. Income was also tested as an explanatory variable and a positive relationship was expected. Stocks of canned purple plums were expected to have an inverse relationship on prices. And finally a number of variables representing competing fruit were tested. These latter variables were expected to vary inversely with prices.

Results confirmed the hypotheses with only one exception. This exception was in the variables representing competing fruit. The U.S. apple growers' price for canning and freezing sales proved to be the only significant variable. Michigan's production, U.S. Northwest total and fresh production all were found to vary inversely with prices. U.S. population and income were found to be closely correlated, both having a direct positive effect on prices. Because these equations are to be used for predictive purposes, population (which by itself explained more of the price variation than income) was retained as an explanatory variable recognizing that the close correlation between it and income means that the income effect is included. U.S. carryin stocks were found to have a significant inverse affect on prices. U.S. apple growers' price was a significant variable because early apples and purple plums compete for packing and processing space. If the apple supply is abundant, causing low apple prices, packers and processors are inclined to pack fewer purple plums.

Equations⁵ were developed to indicate the mathematical relationships between each explanatory variable and the price (dependent variable) received by growers or wholesalers. In equation (a), the variables of Northwest fresh supply, Michigan production, U.S. population and U.S. apple growers' price account for 95 percent of the variation in the price received by Michigan growers in the fresh market. In equation (b), total Northwest production replaces the total Northwest fresh supply in equation (a). With the other three variables the same as in (a), equation (b) explains 83 percent of the variation in the price of processing plums. Equation (c) included total Northwestern production, U.S. stocks of canned purple plums and U.S. population and accounted for 90 percent of the variation in the f.o.b. price received by Northwestern wholesalers for a case of 24 No. 2¹/₂'s. The relationships described by these three equations are historical and useful for estimating future prices only if conditions in the market remain relatively unchanged. For example an institutional change such as centralized selling would constitute a basic change in the underlying economic conditions and would make use of these

⁵The mathematical equations appear in the notes at the end of the article.

equations invalid. Otherwise, by using estimates for each variable, prices may be estimated prior to the sales period.

Price Expectations

Use may be made of the mathematical relationships generated above to estimate the effect of predicted supply increases on future prices. To this end, estimates have been obtained for each of the variables in equations (a), (b), and (c). Using these estimates, a price was generated for the fresh, processed and canned markets. While the prices generated are likely to occur in 1972 or 1973, the same equations can be used with other estimates for a number of years.⁶

All three equations will use the same values for the independent variables thus providing an indication of what all three sections of the market can expect under one set of market conditions.

Estimates used are as follows:⁷

X_1 = total U.S. Northwestern purple plum production = 70,000 tons

X_2 = total U.S. Northwest fresh supply of purple plums = 35,000 tons

X_3 = Michigan's total purple plum production = 24,000 tons

X_4 = U.S. population = 210 million

X_5 = U.S. apple growers price for canning and freezing sales = \$45/ton

X_6 = U.S. carryin stocks = 650,000 cases of No. 2¹/₂'s.

These prices appear particularly feasible if current market conditions and trends continue. With Michigan's production reaching 18,000 tons in 1971, a 24,000 ton yield in 1972, or 1973 at the latest, appears likely in view of current acreage. An apple price of \$45.00 per ton appears to be realistic in light of recent production trends in world apple production areas. A carryin stock

⁶The equations should be continually updated to determine whether any change in reliability has occurred.

⁷The values used here were used in the author's thesis and represent expected changes assuming the continuation of present market conditions and trends. They are however illustrative and if more recent data suggests changes in these values readers are urged to make the necessary substitutions.

TABLE 3: CANADIAN REGIONAL AND TOTAL PLUM PRODUCTION AND TOTAL FARM VALUE (T.F.V.) 1958 – 1971

Year	Ontario		British Columbia		Nova Scotia		Canada	
	Production	T.F.V.	Production	T.F.V.	Production	T.F.V.	Production	T.F.V.
	'000 lb.	'000 \$	'000 lb.	'000 \$	'000 lb.	'000 \$	'000 lb.	'000 \$
1958	21,100	751	11,050	431	250	12	32,400	1,194
1959	18,000	597	12,750	414	250	13	31,000	1,024
1960	13,350	518	9,750	439	250	13	23,350	970
1961	17,000	664	11,650	580	250	13	28,900	1,257
1962	9,350	429	14,700	586	300	16	24,350	1,031
1963	21,350	800	13,400	621	250	13	35,000	1,434
1964	17,000	605	15,900	550	300	16	33,400	1,171
1965	18,450	799	6,750	407	50	3	25,250	1,209
1966	15,700	805	13,550	670	300	16	29,550	1,491
1967	9,700	709	13,750	650	100	5	23,550	1,364
1968	11,000	922	6,900	480	250	14	18,150	1,416
1969	8,600	810	6,200	420	150	8	14,950	1,238
1970	11,000	937	8,550	676	250 p	16	20,022	1,629

¹ Values reported from 1968 to 1970 represent marketed production only.

SOURCE: Crop and Seasonal Price Summaries, C.D.A.

of 650,000 cases may be lower than actually occurs but is average for the past ten years. Carryin may be higher if processors canned larger than normal quantities in 1971 expecting the price to increase in the following year. Population and Northwestern production are expected to increase gradually and approximate these levels in 1972 or 1973. The prices generated here are Michigan and Northwestern prices. They do not include transportation and duty costs payable by Canadian importers. However, they do represent raw product prices available at the grower's gate in the case of equation (a) and (b) and the f.o.b. price for Northwestern canned purple plums at the processor's location. These are the product prices available to Canadian importers, f.o.b. U.S. grower location.

Using these estimates, for 1972-1973, the predicted prices for fresh type, process type and canned f.o.b. purple plums are as follows:

$$(a) \text{ Fresh Price} = -140.7191 - 1.6683(35) - 8.3193(24) + 1.8071(210) + 1.2144(45) = \$35.37 \text{ per ton}$$

$$(b) \text{ Process Price} = -4.3656 - 0.2512(\log 70) - 1.0369(\log 24) + 3.0797(\log 210) + 0.4173(\log 45) = \$38.13 \text{ per ton}$$

$$(c) \text{ f.o.b. Price} = 0.4654 - 0.2676(\log 70) - 0.0786(\log 650) + 0.3919(\log 210) = \$4.58 \text{ per case of 24 No. } 2^{1/2}\text{'s.}$$

All three prices indicate a continuation of lower prices in the U.S. purple plum industry. Equations (a) and

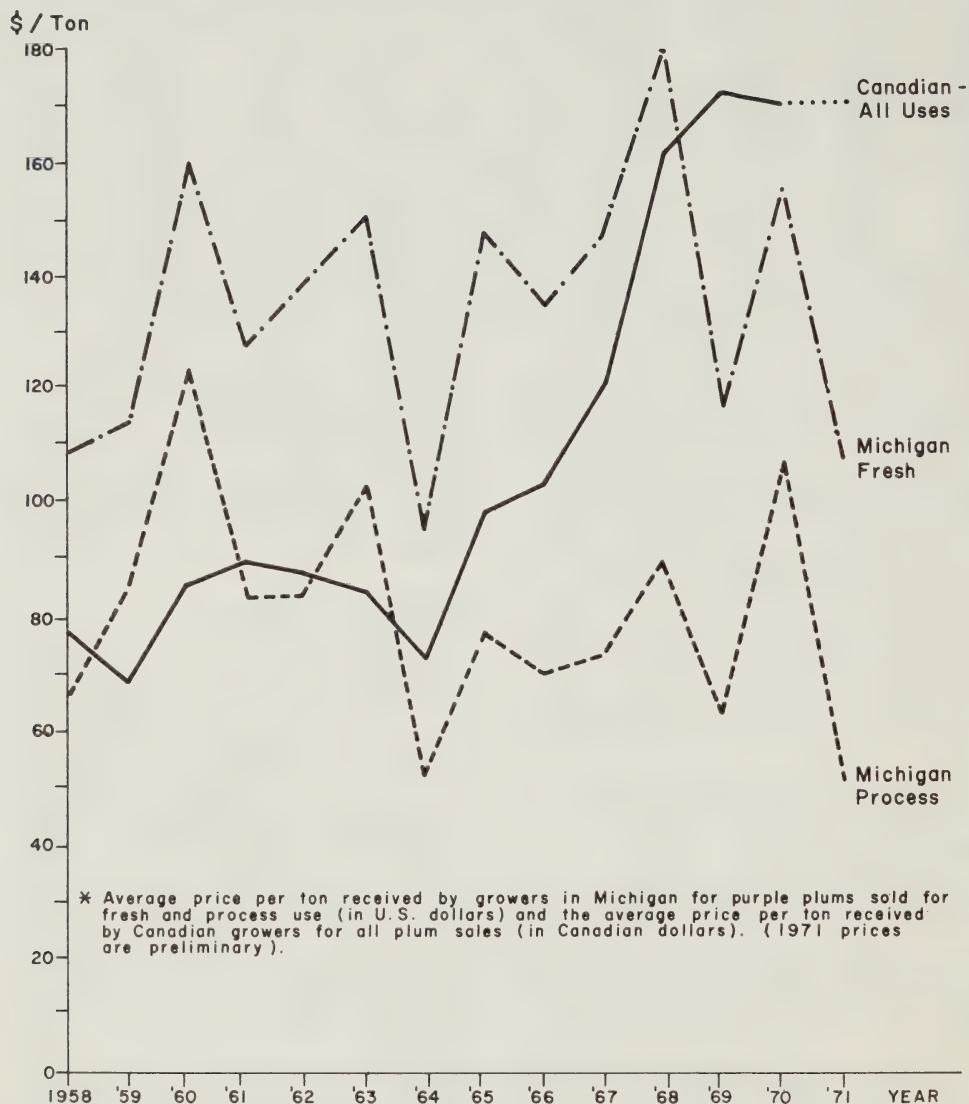
(b) indicate that Michigan growers can expect to receive prices slightly below the 1971 prices in 1972 and 1973. This assumes that market conditions in 1972 and 1973 remain similar to those in 1971 and earlier. Equation (c) predicts an f.o.b. price of \$4.58 per case of 24 No. 2^{1/2}'s which is below that received by Northwestern processors since 1966.

Canadian Purple Plum Industry

From 1966 to 1970, purple plums accounted for approximately 63 percent of total Canadian plum production. Purple plum growers earned approximately \$800,000 in 1969 and again in 1970. Because of the small size of the Canadian purple plum industry, Canadian statistical reports combine purple plum production, utilization and prices with other plums, making direct comparison with the U.S. industry difficult (Tables 2 and 3).⁸ Even though the statistical data are combined, it is known that the Canadian industry markets fresh purple plums and canned whole plums. Using provincial information and the comments of industry participants, this section attempts to account for Canadian industry's response or lack of response to changes in the U.S. purple plum industry.

⁸ Ontario Department of Agriculture and Food, "Agricultural Statistics for Ontario, 1970", page 68. Since 1967 Ontario has recorded separate prices for purple plums showing that purple plum producers received 1.5 to 2.0 cents per pound less than growers of other plums. This price difference was used in arriving at the estimated \$800,000 value designated as receipts by purple plum growers.

CANADA PLUM PRICES - MICHIGAN PURPLE PLUM PRICES



Despite low U.S. prices in 1971, Canadians reported very little supply and price pressure from the U.S. industry, this occurred for two reasons. The harvest was nearly over before the market realized that a record supply existed. In addition, the marketing mechanism requires time before it can adjust to changes in the market place. These two factors may account for the lack of pressure in 1971, but what will keep U.S. purple plums from flooding the Canadian market in the future?

There are a number of factors that will affect the quantity of purple plums imported into Canada. The most important may be the influence of Canadian producer organizations. At present, bulk shipments of ungraded purple plums cannot be imported into Canada unless producer organizations state that they cannot supply the required quantity from domestic production and thereby authorize the importation of bulk shipments. When bulk, ungraded shipments are allowed into Canada, they are usually assigned to specific processors for processing only. Alternatively, purple plums imported for the fresh market must meet federal regulations with respect to size, quality and packaging. The expense incurred in grading and packaging purple plums to meet government regulations usually makes fresh market purple plums too expensive for processing in Canada.

Another important cost factor that has, and may continue to, limit imports is that importers must cover transportation, duty and spoilage costs. With a source of supply located close to Ontario and British Columbia, transportation costs are not exorbitant. The duty on fresh purple plums is $1\frac{1}{2}$ cents per pound or 10 percent *ad valorem* for the twelve week period when domestic production is available. For canned fruit, the *ad valorem* duty is 10 percent of the f.o.b. value. With a duty of \$30.00 per ton, the 1971 price difference between Michigan and Ontario for process-type purple plums of approximately \$110.00 a ton leaves \$80.00 to cover transportation and spoilage costs. Spoilage costs for purple plums used in processing are relatively high because the fruit must be left on the tree for a longer period than plums for the fresh market. The spoilage in a shipment depends upon transportation time, condition of plums at picking, heat removal and method of handling. Since spoilage is so variable, there is no estimate available.

Lack of uniform quality and current mechanical harvesting methods were mentioned by Ontario processors as additional reasons for not importing Michigan purple plums. This is in contrast to the states of Washington, Oregon and Idaho which enjoy a reputation of having consistently well-sized, high-quality purple plums for

both the fresh and processed markets. For example, in 1971 several processors in British Columbia imported bulk shipments from the U.S. Northwest for processing. Organization by the Michigan industry might bring the quality up to that of the other states and make the fruit more acceptable in the Ontario market.

Can size and market size are two factors which account for the small quantity of canned purple plums imported to Canada. U.S. processors do not usually produce a 14 oz. can, preferring instead the 17 oz. and 28 oz. sizes suitable for the U.S. market. Before producing the 14 oz. size, processors would require assurance of sizeable sales. Although canned imports are not reported, the apparent domestic disappearance of canned plums indicates a small market (Table 2). However, if the prices remain low in the U.S., a number of processing firms in the U.S. may find it profitable to process for the Canadian market.

Summary

Despite a drop in United State's purple plum prices to as low as \$40.00 per ton in 1971, prices to Canada's industry remained for the most part unaffected. An expected increase in Michigan's purple plum production to at least 21,000 tons, will lead to a lower fresh price of \$35.00 per ton and process price of \$38.00 per ton. The extent of the U.S. supply increase and price decline may not have been known by the market in 1971 and is credited for some of the lack of response by the market. Other factors such as the time required for the market organizations to react, influence of Canadian grower organizations, low quality reputation of Michigan purple plums, costs of transportation, spoilage and differences in can size may all have contributed to the lack of market changes in Canada as a result of the changes in the U.S. in 1971. However, with U.S. prices expected to continue to decline, Canadian prices at the very least will not increase and may be forced below the \$150.00 per ton reportedly received in 1971, as they encounter pressure from increased imports.

Based on the change in Michigan's supply, with its resulting price decline, a number of changes can be anticipated for the Canadian industry. Ontario's fresh plum industry can expect an increase in fresh purple plum imports at prices below those of recent years. Such major markets as Toronto and Montreal are obvious locations for this increased competition from fresh purple plums. On the West Coast, British Columbia will likely encounter increased competition from the U.S. Northwest for fresh sales in Calgary and Regina and competition from Michigan for the Winnipeg market. As for canned plum sales, all major cities can expect increased pressure from U.S. exports to Canada.

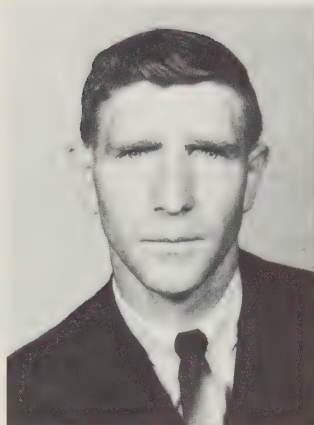
POTATOES . . . HARVESTING METHODS . . . RETURNS



James Lovering *



Allison McIsaac **



Merlyn Scott **

On under 35 acres, the hand-barrel system gives greatest returns to management.

Between 35 and 70 acres are most profitably harvested with a conventional mechanical harvester.

On over 70 acres, air vacuum harvesters are most profitable, especially on stony land.

INTRODUCTION

The purpose of this study is to examine some of the important economic factors in harvesting potatoes and to determine how changes in harvesting methods affect returns to management. Returns to management is the difference between gross receipts and the sum of all machinery, real estate, labor, fertilizer, chemical, seed, rotation and general expenses. It is the amount left to the farm business operator for his organizational and managerial activities.

Comprehensive and uniform procedures were developed for the calculation of returns to management for the three common machine combinations used in potato harvesting. Changes were made in each of these common

situations to see how, and to what extent, management returns were affected. Finally, returns to management figures for these situations were compared to find the least expensive procedure.

The three harvesting systems studied were conventional mechanical, air vacuum and hand-barrels. Each system was considered at various machine work rates, potato acreages, potato yields and hauling distances at harvest. Complete specifications of these situations are shown in Appendix 1. This article deals exclusively with these variations because they are the major expense items under farmers' control. Table 1 shows a breakdown of the total costs incurred up to the time potatoes leave farm storage, graded in bulk.

Although crop inputs comprise about 40 percent of total per acre costs, they are not considered in detail because other studies and information indicate that following agronomic recommendations on fertilizers, chemicals and seed is almost always most profitable.

*Dr. Lovering is an economist at the C.D.A. Research Station in Charlottetown.

**Mr. McIsaac and Mr. Scott are both with the Engineering Branch, New Brunswick Department of Agriculture. The authors have worked together to study the economic and physical considerations of potato harvesting.

TABLE 1: PERCENTAGE BREAKDOWN OF POTATO PRODUCTION COSTS*

Item	Conventional Harvester		Air Vacuum Harvester	Hand-Barrels
	P.E.I.	N.B.	N.B.	N.B.
	percentage of total cost			
Tillage, planting, spraying,	5.0	4.9	4.8	5.2
Harvesting,	6.0	5.9	7.0	1.6
Hauling and piling,	5.8	5.7	5.7	4.7
Grading,	2.0	1.8	1.9	1.8
Total machine costs/acre	18.8	18.3	19.4	14.0
Tillage, planting, spraying,	2.3	2.3	2.4	2.2
Harvesting,	2.7	5.4	2.7	12.8
Hauling and piling,	2.0	1.8	2.0	2.9
Grading,	13.6	13.3	13.4	12.6
Total labor costs/acre	20.6	22.8	20.5	30.5
Chemicals	8.1	7.8	8.0	7.4
Fertilizer	15.0	14.6	15.0	13.9
Seed	16.9	16.5	16.8	15.7
Total crop inputs/acre	42.2	41.4	42.0	39.3
Land taxes	1.3	1.3	1.3	1.2
Storage	2.9	2.8	2.9	2.7
Total real estate costs/acre	6.8	6.7	6.8	6.3
Total interest/acre	11.4	11.1	11.2	9.9
Total production cost/acre	100.0	100.0	100.0	100.0

*Under the standard conditions specified in Appendix 1.

Machine and labor costs, about 40 percent of total costs, are the areas over which farmers can exercise most control and which give the greatest opportunities for cost reduction.

CONVENTIONAL AND AIR VACUUM HARVESTERS

The Relationship between Return to Management and Harvester Work Rate

Figure 1 shows the relationships between returns to management (dollars per acre) and harvester work rate (acres per hour) for one and two conventional harvesters in N.B. and P.E.I., and for one and two air vacuum harvesters in N.B. Other machines used with these harvesters, amounts and prices of other inputs and yields are described in Appendix 1.

In P.E.I., the relatively few stones permit a much smaller harvester crew and do not necessitate rock picking as a separate operation. The air vacuum harvester in N.B. is more profitable than the conventional harvester on all potato acreages greater than 70 because the additional costs of depreciation, repairs, fuel, interest and insurance

are more than offset by using a smaller crew. In addition, the air vacuum harvester's higher standard work rate (0.89 vs 0.68 acres hour)¹ offers some insurance over the conventional harvester in poor harvest seasons.

Table 2 shows how reduced labor and machine costs can increase management returns when the harvester work rate is increased.

A slow harvest work rate not only results in high labor costs but also "wastes" good harvest weather. In some harvest seasons this means a great deal of lost or damaged crop.

Like other aspects of farm business operation, the achievement of high harvester work rates requires careful planning and adequate preparation. Well-trained workers, nearly stone-free land, wide headlands, long rows, well maintained machines, and a well organized hauling and unloading system with an adequate number

¹ See M.L. Scott: "Potato Production Studies - Harvesting", issued by the Engineering Branch, N.B. Department of Agriculture and Rural Development.

INCREASING HARVESTER WORK RATE ON RETURNS TO MANAGEMENT

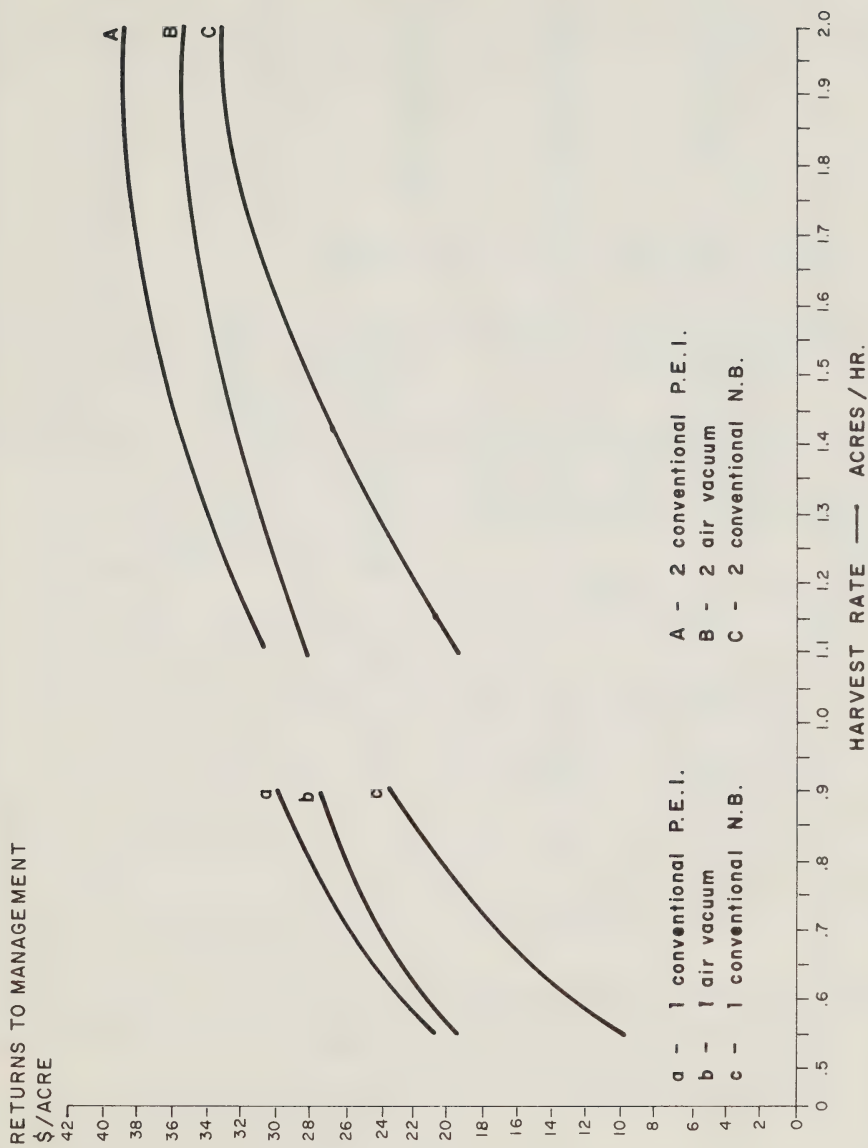


FIGURE 1.

TABLE 2: THE EFFECT OF HARVESTER WORK RATE ON RETURNS TO MANAGEMENT AND MACHINE AND LABOR COSTS, CONVENTIONAL HARVESTER, NEW BRUNSWICK*

Harvester Work Rate (Hrs/acre)	Return to Management (\$/acre)	Total Machine Costs (\$/acre)	Machine Harvesting Costs (\$/acre)	Total Labor Costs (\$/acre)	Labor	
					Harvesting Cost (\$/acre)	Hauling Cost (\$/acre)
1.8	9.89	58.97	19.87	79.20	21.60	5.40
1.7	11.81	58.7	19.59	77.55	20.40	5.10
1.6	13.76	58.40	19.30	75.90	19.20	4.80
1.5	15.95	58.12	19.02	74.25	18.00	4.50
1.4	17.61	57.85	18.74	72.60	16.79	4.19
1.3	19.54	57.56	18.46	70.95	15.60	3.90
1.2	21.47	57.29	18.18	69.30	14.39	3.59
1.1	23.40	57.00	17.89	67.65	13.20	3.30

*Harvester work rate is the only changing factor; all others are as shown in Appendix 1.

of hauling units are all part of the requirements. The minimum number of hauling units required for economical operation in almost all circumstances is two.

Increased harvester work rate does not mean increased harvester bed speed. Beds should be run at speeds consistent with acceptable potato damage levels. Attempts to increase harvester work rates by increasing bed speeds will likely involve greatly increased potato damage.

If the time needed for hauling, unloading and returning is more than the time required for the harvester to fill a 120-cwt. bulk box (0.63 hours under standard conditions), a third hauling unit may be necessary. In general, and not considering additional weather risk, the harvester should be allowed to wait for a hauling unit for the portion of an hour equal to the ratio of hourly cost of an additional hauling unit to the hourly cost of harvester wait.² Under standard conditions in P.E.I., for the conventional harvester, harvester wait should not exceed about 25 minutes.³ In N.B., because of larger harvester crews, the conventional harvester should not wait more than 15 minutes. Because of its small crew, it would pay to let an air vacuum harvester wait up to 27 minutes.

The Relationship Between Return to Management and Potato Acreage

Figure 2 shows that returns to management per acre increase with increasing acreage for all machine combinations. The conventional harvester in P.E.I., for

example, shows an increase of about \$4.50 per acre in management return when acreage is increased from 100 to 120. These changes result mainly from spreading fixed costs (interest, insurance, shelter and depreciation) over larger acreages, resulting in a lower charge for these items on a per acre or per unit-of-potatoes-produced basis. To a lesser extent, the same thing applies to potato storage. New capital cost, and hence depreciation, repairs, taxes, insurance and interest, per unit of potatoes stored are somewhat less in the larger storages associated with larger potato acreages.

The maximum acreage on which equipment may be used is governed by the equipment's work rate and the time available. In New Brunswick, farmer experience indicates that a standard harvest season runs from September 15 to October 25. Excluding Sundays, this is 35 potential working days. Analysis of weather records for the past decade for Caribou and Houlton, Maine, (15 miles from Grand Falls and 10 miles from Woodstock, respectively) and information in farmers' diaries indicates that fields are in good harvesting condition for about 64 percent of the days during this period. Working 10-hour days, farmers have a 225-hour or 22.5 day harvest season. The conventional and air vacuum harvesters (0.68 and 0.89 acres per hour, respectively), and a 22 or 23-day harvest season, indicate that the conventional harvester can handle up to 150 acres, whereas the air vacuum harvester can handle up to 195 acres in a standard harvest season⁴, providing there are no breakdowns or other delays.

These acreages could be harvested in an average harvest season. Farmers, however, seldom deal with an average season. The question is, what is the best balance between risk of crop damage and loss in large acreages and missed opportunities to handle larger acreages?

²This should not include harvester, bin piler, or bulk box costs since these items have no alternative uses. Hourly costs of all other machines and labor should be included.

³See Lovering et al.: "Maritime Potato Production Costs", Atlantic Agricultural Economics Committee, November 1970.

⁴See Appendix 2 for a definition of rainfall amounts that are considered to stop or seriously hamper harvest operations.

INCREASING ACREAGE AND RETURNS TO MANAGEMENT

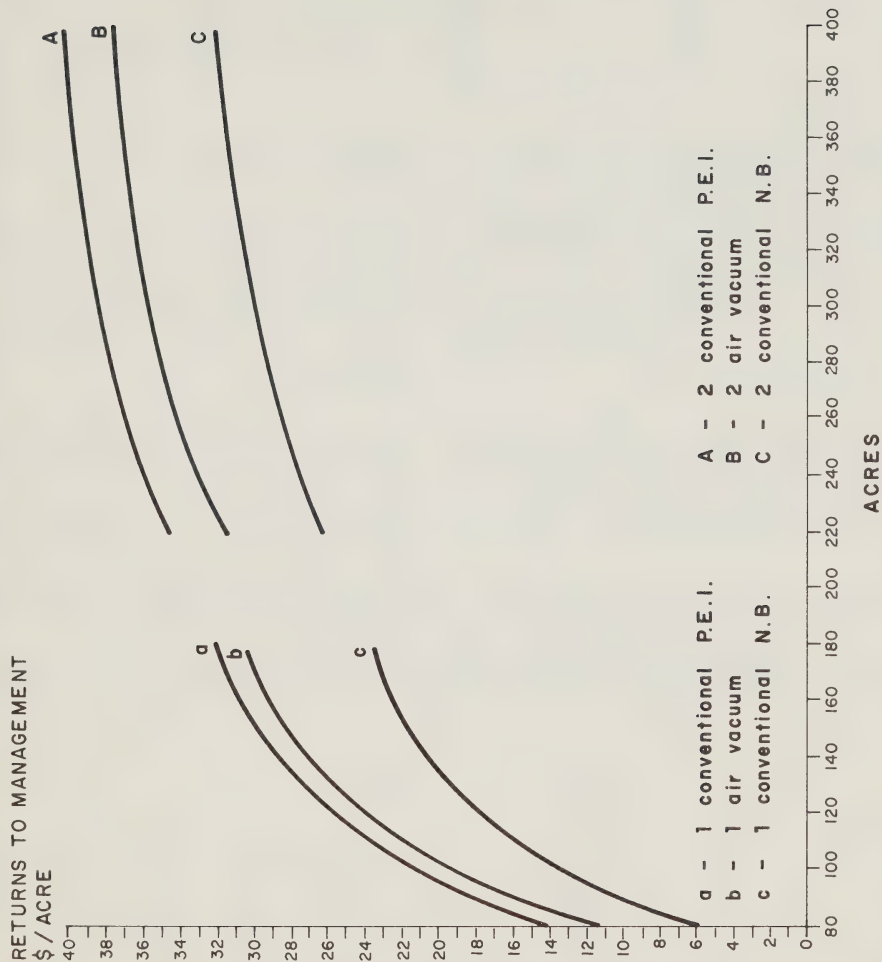


FIGURE 2.

TABLE 3: EFFECT OF POTATO ACREAGE ON RETURNS TO MANAGEMENT, MACHINE COST, INVESTMENT AND INTEREST, CONVENTIONAL HARVESTER, P.E.I.

Acreage	Returns to Management (\$/acre)	Total Machine Cost (\$/acre)	Interest on Machines (\$/acre)	Equipment Investment* (\$/acre)
80	13.87	65.64	14.15	385.
100	21.52	60.82	11.32	308.
120	26.00	58.22	9.43	257.
140	28.64	56.93	8.08	220.
160	30.56	56.02	7.07	193.
180	32.01	55.36	6.29	171.

*Equipment Investment is new cost less expected salvage or trade-in value.

A weather simulator⁵ developed from ten years of data from Caribou and Houlton, Maine was used to examine this question. Crop damage was estimated for two, four and six cents per bushel per day for each day that the simulated number of good days from September 15 to October 25 was less than that required to harvest various acreages with a conventional harvester under standard conditions in New Brunswick. The damage calculations were applied to the portion of the crop that was still unharvested after October 25.

The data in Table 4 indicate the planted potato acreage that should permit complete harvest in a period of about two days shorter than the average number of good days, when loss per bushel per day is four cents. This is 120 to 140 acres for a conventional harvester under standard

conditions in New Brunswick, and 170 to 190 acres for an air vacuum harvester.

These conclusions depend on the soundness of the estimates of the nature and extent of losses occurring after October 25, both in the field and in storage. *No data are available to support these estimates.*

The Relationship between Returns to Management and Yield

Figure 3 shows returns to management per acre at various yields for a conventional harvester in P.E.I. As in almost all studies of crop production, this study shows relatively high yields to be a key element in achieving high returns to management. At any particular price level, higher yields mean a larger gross income to support a nearly constant cost of production and allow for increased management return. Put another way, larger yields mean the spreading of nearly constant

⁵F.V. MacHardy: personal communication, October 9, 1970. The simulator is based on a Monte Carlo Procedure.

TABLE 4: A COMPARISON OF "MAXIMUM" MANAGEMENT RETURNS AND EXPECTED LOSSES FOR VARIOUS POTATO ACREAGES UNDER VARIABLE WEATHER FOR A CONVENTIONAL HARVESTER IN N.B.

No. of "Good" Days	Acreage to Match No. of "Good" Days	"Maximum" Management Returns for the Acreage	Expected Annual Losses in			Net Returns to Management		
			2¢/bu/day	4	6	2¢/bu/day	4	6
16	108	\$2117	\$ 7	\$ 14	\$ 20	\$2110	\$2103	\$2097
17	115	2266	17	32	48	2249	2234	2218
18	122	2416	33	65	98	2383	2351	2318
19	129	2567	61	121	181	2506	2446	2386
20	136	2720	106	212	318	2614	2508	2402
21	143	2874	175	350	524	2699	2524	2350
22*	150	3030	275	549	824	2755	2481	2206
23	157	3187	412	825	1237	2775	2362	1950
24	164	3346	593	1186	1760	2753	2160	1568
25	171	3506	827	1655	2481	2679	1851	1025
26	178	3667	1114	2228	3342	2553	1439	325
27	185	3830	1459	2917	4377	2371	912	- 547
28	192	3994	1863	3726	5589	2131	268	-1595
29	199	4159	2328	4654	6982	1831	- 495	-2823

*Mean number of good days

INCREASING YIELD AND RETURNS TO MANAGEMENT

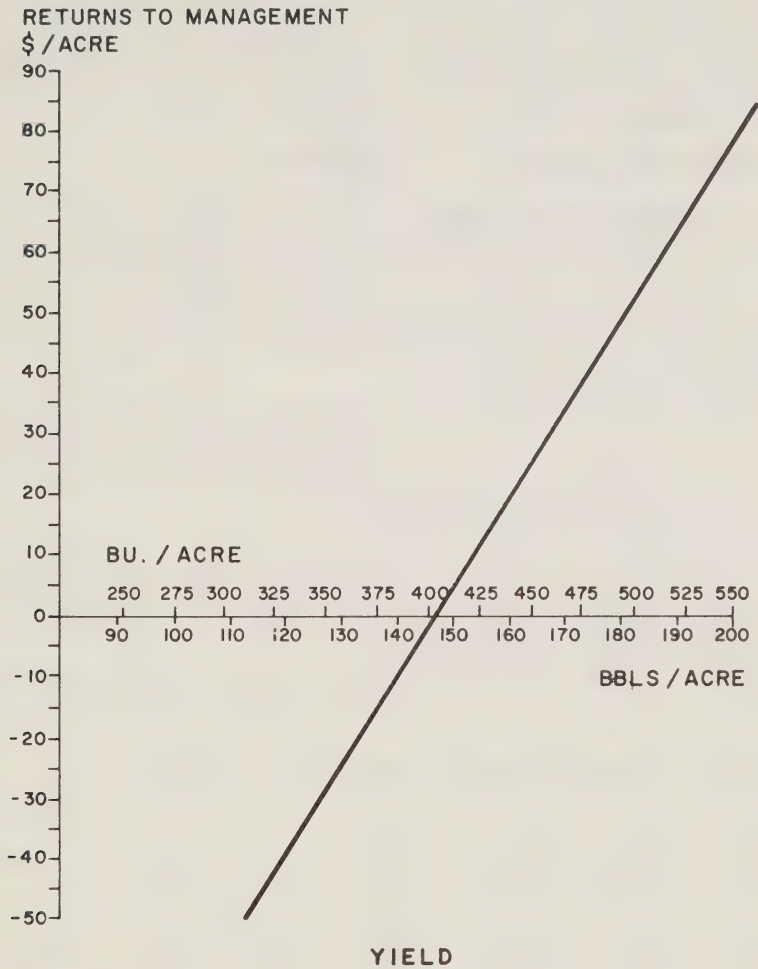


FIGURE 3.

production costs over more units of production resulting in a lower cost per unit.

The difference in cost between producing average yields and high yields is very small.

Increased yields do increase costs to some small extent of course. For a constant harvester speed, they require hauling times to be shortened, or perhaps an additional hauling unit be added. On a per acre basis they require that storage size, and hence total storage costs, be increased, that grading machine and labor costs and interest charges be increased. These additional costs are about 25 cents per additional cwt. of potatoes.

HAND PICKING-BARREL HARVEST

The Relationship between Returns to Management and Potato Acreage and Size of Picking Crew.

The size of the picking crew should be chosen with two purposes in mind. The first is to get the crop harvested within the standard harvest season. The second is to keep the investment in hauling units, barrels and baskets at a minimum, thereby minimizing non-picking harvest costs.

A picking crew of 30, and two hauling units, provide the largest return to management for potato acreages ranging from 50 to 200. At 240 acres, a picking crew of 40 and three hauling units are required.

The decrease in management returns that result from changing the picking crew size from 30 to 60 pickers and, hence, increasing the numbers of hauling units, is about \$5.00 per acre for enterprises in excess of 200 acres of potatoes.

The size of the picking crew determines the harvest rate which, in turn, is important, along with speed and distance of travel, unloading time and truck capacity in determining the number of hauling units. Under standard conditions two hauling units of 45-barrel capacity will adequately serve 30 pickers for return trip distances up to five miles.

Table 5 shows changes in the number of hauling units and barrels, total machine costs, hauling unit costs, all non-picking labor, and labor for hauling and receiving that occur when the picking crew size increases from 20 to 100 people, considering a 120-acre potato enterprise under standard conditions.

SUMMARY

1. Air vacuum harvesters were more profitable than conventional harvesters under New Brunswick conditions. Because of a higher work rate, they also provide insurance against weather risk. Conventional harvesters in Prince Edward Island were found to yield higher returns to management than either harvesting system under New Brunswick conditions.

2. Harvester work rates can be increased by using well trained workers, adequate head lands, well maintained machines, long rows and well organized hauling and unloading systems. This can increase returns to management.

3. Larger acreages reduce costs of equipment operation, depreciation and repairs per acre. Considering a range in acreage from 80 to 400, it was found that 65 percent of the cost reduction was achieved at 140 acres.

4. Hand-picking-barrel operations invariably resulted in lower management returns than conventional mechanical

TABLE 5: EFFECT OF CREW SIZE ON EXPENSES IN HARVESTING 120 ACRES.

Crew Size	Number Hauling Units	Number of Barrels	Return to Management	Total Machine Costs	Hauling Costs	Total* Labor	Hauling and Receiving Labor	Picking Cost
\$/acre								
20	2	180	- 3.38	49.72	16.01	64.05	12.79	41.60
30	2	180	+ 2.69	46.84	13.64	60.85	9.59	41.60
40	3	225	- 2.39	52.61	18.94	59.25	7.99	41.60
50	4	270	- 8.21	58.46	24.20	59.29	7.03	41.60
60	4	270	- 7.03	57.92	23.51	57.65	6.39	41.60
70	5	315	-13.41	63.83	28.75	57.19	5.94	41.60
80	6	360	-19.91	69.76	34.01	56.85	5.59	41.60
90	6	360	-19.33	69.43	33.54	56.58	5.33	41.60
100	7	405	-25.96	75.36	38.77	56.37	5.11	41.60

*Costs of picking excluded.

harvester systems for yields over 135 cwt. (82 barrels, 225 bushels) and for enterprises greater than 35 acres. Hand picking costs higher than the 26¢/bbl. used in this study would result in conventional harvest systems having a higher profitability than hand barrels at acreages less than 35. For 120 acres, a picking crew of

30 men and two hauling units provided highest management returns per acre.

5. Increasing yields is an effective way of increasing returns to management per acre. High yields cost very little more to produce than low yields, but the cost per unit of crop produced is much lower.

APPENDIX 1

Standard Situations and Conditions

Harvester	Acreage	Work Rate Acres/hour	Crew Size*	Yield cwt/acre	Size of Planter and Cultivator, rows
1-conv.-P.E.I.	120	0.68	4	270	2
1-conv.-N.B.	120	0.68	8	270	2
1-air vacuum	150	0.89	3	270	2
2-conv.-P.E.I.	240	1.36	8	270	4
2-air vacuum	300	1.88	6	270	4
Hand-barrels	120	0.89	30**	160 bbls.	2

*includes tractor operator, but does not include hauling and storage crew

**pickers, does not include digger operator

Machine Performance and Cost Characteristics

Machine	Work rate** acres/hour	New cost less salvage value \$	Maximum*** year life	Maximum*** hour life	Repair*** rate	Crew size
Vibrashank, 7 foot	5.0	960	15	2,500	.90	1
Vibrashank, 12 foot	9.1	1,600	15	2,500	.90	1
Planter, 2 row	1.56	2,700	15	1,500	.75	2
Planter, 4 row	2.78	4,500	15	1,500	.75	2
Cultivator, 2 row	2.8	650	15	2,500	.90	1
Cultivator, 4 row	4.55	1,200	15	2,500	.90	1
Sprayer, 12 row	12.5	1,800	12	2,000	.70	1
Harvester, conv. . . . .	.68	11,000	12	2,000	.75	4 P.E.I. 8 N.B.
Harvester, air-vac . . . . .	.89	13,500	12	2,000	.75	3
Tractor, 90 hp.	—	9,900	15	10,000	.80	—
Tractor, 45 ph.	—	5,200	15	10,000	.80	—
Truck, 3 ton, used	—	3,000	—	2,000	.65	—
Rock picker	5	3,000	15	2,500	.90	1
Digger, 2 row . . . . .	.91	3,500	12	2,500	.75	1
Trailer	—	200	12	2,000	.70	1
Bulk box	—	850	12	2,000	.70	1
Bin piler	—	1,800	12	2,000	.70	1
Grading line	80*	1,200	12	2,000	.70	5
Set Cutter	100*	1,100	12	2,000	.70	2
Barrel	—	3	5	—	.75	—
Basket	—	2	1	—	1.	—

*bu/hr

**M.L. Scott, "Potato Production Studies", issued by Agricultural Engineering Branch, N.B. Dept. of Agriculture and Rural Development.

***J.L. Thompson, *Agricultural Machinery Costs*, C.D.A. Publication 1291, 1966.

APPENDIX 1 (cont'd)

Other Machine Characteristics

Sprayer, gal/ac	50	bulk box, capacity	120 cwt.
Sprayer, gal/hr	1200	bulk box, unload time	0.33 hours
Sprayer, tank, gal	300		
Sprayer, fill, hrs.	0.3		

Chemicals, Fertilizers and Lime: Amounts and Prices*

<u>Chemical</u>	<u>lb/ac</u>	<u>No. of applications</u>	<u>price/lb</u>
Reglone	2	1	\$ 2.50
Gramoxone	2	1	3.00
Dithane M-45	8	5	1.10
Thiodan	2	2	2.57
Polyram	1 lb/cwt seed	1	0.16

Fertilizer, 0.6 tons of 10-20-20 plus magnesium at \$77.50/ton

Lime, 1 ton every 4 years at \$7./ton

Storage Characteristics**

New cost, \$0.30/cubic foot

Expected life, 20 years

Repair and depreciation rate, 7 percent of new cost/year

Tax rate, 1.5 percent of new cost

Insurance rate, \$5/\$1000 coverage

Miscellaneous Items

Land value, \$200/acre

Land taxes, 2 percent of value

Rotation charges, \$8./acre of potatoes/year

General overhead, \$3./acre

Gasoline, \$0.24/gal

Interest rate, 7 percent

Insurance and shelter for equipment, 1.5 percent of new cost

Labor, \$1.50/hour, or \$0.26/bbl for hand picking

Hauling distance for potatoes, spraying, etc., 2 miles return trip

Truck license, \$0.20/acre

Truck insurance, \$1.80/acre

Proportion of crop, first grade, 63 percent at \$1.33/cwt

Proportion of crop, second 22 1.25

Proportion of crop, third 15 0.30

* Potato Production Recommendations for the Atlantic Provinces, 1970

** New Brunswick Dept. of Agriculture and Rural Development, Agricultural Engineering Branch

APPENDIX 11

A comparison of U.S. Department of Commerce weather data with farmers' diaries showed that rainfall amounts of 0.10 inches or less did not hinder the operation of potato harvesters. Rainfall between 0.10 and 0.35 inches stopped harvesting on the day of the rain. Rainfall over 0.35 inches stopped harvesting for at least two days. The actual length of stoppage depended on the wind and sun conditions following the rain.

Probabilities of Various Numbers of Good Days from September 15 to October 25*, Caribou and Houlton, Maine.

Number of Good Days	Probability of Occurrence
22 ± 1	0.23
22 ± 2	0.21
22 ± 3	0.18
22 ± 4	0.14
22 ± 5	0.10
22 ± 6	0.06
22 ± 7	0.02
22 ± more than 7	0.06

*Sundays excluded

POLICY AND PROGRAM DEVELOPMENTS IN CANADA

AGRICULTURAL PRODUCTS MARKETING ACT

(Ontario Egg Order)

The Ontario Egg and Fowl Producers' Marketing Board has been authorized to regulate the marketing of eggs in interprovincial and export trade and, for such purposes, to exercise all its power in relation to the marketing of eggs locally within the Province under the Farm Products Marketing Act of Ontario and the Plan for the marketing of eggs.

The Board is therefore authorized to fix, impose and collect levies from the province's egg producers. The Ontario Board needs to collect levies until the National Plan under the Farm Products Marketing Agencies Act comes into force since interim arrangements have been made with Manitoba and Quebec to price eggs in those three provinces at a level equivalent to the cost of bringing U.S. eggs into Montreal. The Ontario Egg and Fowl Producers' Marketing Board will need the taxing power in order to take surplus Ontario eggs from the market. (June 29, 1972)

(Ontario Egg Marketing Levies Order)

The Ontario Egg and Fowl Producers' Marketing Board pursuant to the above-mentioned Ontario Egg Order issued an Order providing for the fixing, imposing and collecting of levies from Ontario egg producers.

As of July 10, 1972, every producer will pay to the Board, in addition to the service charges set out under the Plan, levies at the rate of one-third of one cent per dozen eggs sold by him.

(Saskatchewan Egg Marketing Levies Order)

The Saskatchewan Commercial Egg Producers' Marketing Board, following the Saskatchewan Egg Order has issued an Order for the fixing, imposing and collecting of levies from certain egg producers.

Every producer will pay to the Board, in addition to service charges, levies at the rate of \$.0125 per period of three months, for each layer not in excess of the quota fixed and allotted to him.

(Prince Edward Island Potato Order)

The Prince Edward Island Potato Marketing Board has been authorized to regulate the marketing of potatoes in

interprovincial and export trade and, for such purposes, to exercise all its powers in relation to the marketing of potatoes, within the Province under the Prince Edward Island Natural Products Marketing Act and the Plan for the marketing of potatoes.

Following that Order, the Board is also granted authority to fix, impose and collect levies for the purpose of orderly marketing. (July 11, 1972)

AGRICULTURAL STABILIZATION ACT

(Sugar Beet Support Program)

The support level of prices for the 1972 sugar beet crop will remain at \$15.98 per standard ton of beets delivered to the processing plant.

Although world sugar prices have been strong during the past few months, the support program remains essential for the protection of Canadian sugar beet growers should the world price deteriorate.

Sugar beet acreage and production this year are expected to be about the same as last year.

In 1971, sugar beets were grown on 81,050 acres — 42,100 in Alberta, 30,850 in Manitoba and 8,100 in Quebec. Production was 1.2 million tons of beets which in turn yielded 302 million pounds of sugar.

Support under the stabilization program is provided through deficiency payments. (June 10, 1972)

(Egg Producer Aid Program)

The Egg Producer Aid Program, started on June fifth of this year, was aimed at removing excess hens from the Canadian laying flock in order to remove surplus eggs which were disrupting marketing channels.

The federal government offered to pay producers to increase fowl marketings by one million birds within an eight week period. Egg producers normally market about 250,000 laying hens a week.

A sliding scale was built in the payment to encourage maximum removal of surplus birds within the shortest possible time. Under this formula, if the target was to be reached within six weeks, farmers were to receive approximately 90 cents per bird marketed.

On June 27, Agriculture Minister H.A. Olson announced that the program was terminated, and he expressed satisfaction at the enthusiastic response of producers in achieving so quickly, the goals of the program.

It is estimated that producers' prices have strengthened to increase producer returns by approximately \$300,000 for eggs marketed in the second week of the "Egg Producer Aid Program".

Mr. Olson especially acknowledged the actions of the various provincial governments in setting up a control mechanism that makes it possible for a continuing effect of this program. He noted that producer organizations across Canada have set a target date of November 1 for the establishment of a national egg marketing agency and are working diligently towards that end.

(Order Respecting Stabilization of the Price of Manufacturing Milk and Cream)

The prescribed price for manufacturing milk has been set at 169.7 percent of the base price.

The Agricultural Stabilization Board will make payments of \$107,000,000 to the Canadian Dairy Commission for the period April 1, 1972 to March 31, 1973. The purpose of the payments is to stabilize the price of manufacturing milk at the prescribed price. (June 1972)

CANADA GRAIN ACT

(Off Grades of Grain and Grades of Screenings)

The Canadian Grain Commission, pursuant to Section 16 of the Canada Grain Act, has amended the Order Establishing Off Grades of Grain and Screenings. The amended paragraphs have been published in *Canada Gazette*, Vol. 106, no. 14. (July 1972)

CANADIAN DAIRY COMMISSION

(Prairie Provinces Join Dairy Supply Management Program)

Dairy producers in Alberta, Saskatchewan and Manitoba will come under the Market Sharing Quota Program. With the three prairie provinces joining Prince Edward Island, Quebec and Ontario, more than 95 percent of the milk and cream used in manufactured dairy products will be under market sharing quotas.

The arrangement is designed to provide a balance between supplies of dairy products and market requirements. Under agreement with the Canadian Dairy Commission, agencies administering the program in each province allot market sharing quotas to producers in each province based on previous production patterns.

Deliveries by producers up to their quotas receive the Canadian market price. Deliveries in excess of quotas receive a lower price related to the export value of surpluses over normal market requirements.

As a result of the decision by those provinces to adopt the Market Sharing Quota Program, manufacturing milk and cream shippers will receive some additional subsidy eligibility quota from the Canadian Dairy Commission.

The program came into effect in Alberta on April 1 and is expected to start soon in the two other prairie provinces.

The arrangement is that when a province enters the Market Sharing Quota Program, the Commission restores the total of the subsidy quotas to producers in that province to the total as at April 1, 1970. When the additional quota is issued, it will be retroactive to cover deliveries since April 1, 1972.

FARM CREDIT CORPORATION ACT

(Amendments to the Farm Credit Act)

Bill C-5 to amend the Farm Credit Corporation Act has received Royal Assent, thus putting into effect certain changes that will make it easier for certain farmers to borrow money from the corporation.

The amendments also enable the corporation to carry out duties or functions that may be assigned to it under the agricultural programs such as the Small Farms Development Program.

The most significant change for individual borrowers are:

- an increase in the loan ceiling for individual operators,
- removal of the minimum age of 21 years as qualification for a loan,
- restriction of loans to Canadian citizens or landed immigrants.

The Act has been amended to provide for a maximum loan of \$100,000 to any farmer alone or jointly with others in a single farming operation. (July 1972)

DEVELOPMENTS ABROAD

Highlights from "Spot News from Abroad", the newsletter issued by the International Liaison Service of the Canada Department of Agriculture, in co-operation with the Trade Commissioner Service of the Department of Industry, Trade and Commerce. This Newsletter may be obtained regularly by writing to I.L.S., C.D.A., Ottawa. K1A 0C5.

Livestock

Westward Shift in Location of US Cattle Feeding Industry

The cattle feeding industry in the US has undergone significant changes during the past ten years and these changes continue. There are three distinct trends within the industry's pattern of change. They are (1) a growth in volume, (2) a westward shift in location, and (3) an increase in the size of feedlots.

The westward shift is shown by the location of the states with the greatest increase in fed cattle marketings between 1961 and 1971 and the amount of those increases: Texas, 3.1 million; Nebraska, two million; Iowa, 1.4 million; Colorado, 1.4 million; and Kansas, 1.3 million. Illinois marketings were down 207,000 in that ten-year period. Much of this westward increase in feeding came as a result of greater feed supplies, realized through irrigation and improved grain sorghum crops. [Illinois Farmers' Outlook Letter, Urbana, Illinois, June 7, 1972]

Argentina - Exports of Meat and Meat by-Product

Exports of meat from Argentina are increasing. The Argentinian National Meat Board published the May 1972 export figure for meat and meat by-products at 51,784 tons for a value of US\$57,282,000. This compares with the 45,476 tons exported during May 1971 for a value of US\$49,994,000. During the period January-May 1972 Argentina exported 226,563 tons for a value of US\$241,182,000. [Canadian Assistant Commercial Secretary (Agriculture), Buenos Aires]

EEC Price Increases

The target price for beef in the EEC has been increased by four percent as of April 1, 1972 to \$36.75 per 100 lb. and a further increase will be decided on by the Council of Ministers by mid-September, 1972. The target price for veal was kept at least year's level of \$46.25 per 100 lb. The basic price of pork was increased by 3.1 percent to \$40.50 per 100 lb. [First Secretary (Agriculture) Mission of Canada to the EEC]

Dairy Products

Britain - Butter Shortage and Increased Margarine Production

The world butter shortage resulted in a nine percent increase in production of margarine in Britain in 1971, the highest level since 1964. Comparatively stable prices compared with rapidly increasing butter prices stimulated the development of the new soft luxury margarines, now estimated to account for one-fifth of the total margarine market. Margarine price cuts which are likely to further encourage demand have recently been announced by the two largest suppliers in Britain. [Canadian Commercial Officer (Agriculture), London]

New Milk Products Launched in Britain

Unigate Foods Ltd., the major dairy group in Britain, is launching a range of new milk products. The first is a fresh milk concentrate, which is packed in one pint cartons and can be reconstituted into two pints of fresh milk by adding one pint of water. The product takes only half the space of two pint bottles and it is claimed that it will benefit from the generic advertising from the Milk Marketing Board, as well as Unigate's own promotional activities.

Other new milk products to be introduced are fruit flavoured buttermilk and "Top of the Milk". The butter milk products are packed in one pint cartons retailing at 12½ pence (32¢) and could be used as a drink or as a topping, and Unigate feel that flavoured buttermilks could eventually challenge the market for yogurt, which is now valued at £10 million (\$25 million) annually. Unigate have admitted that promotion of the new products could possibly detract from their liquid milk market. With greater competition from E.E.C. milk products, Unigate is developing a policy to create more markets for domestic milk production and are concentrating their efforts on supermarkets and retail outlets. [Canadian Commercial Officer (Agriculture), London]

Poultry and Eggs

Egg Price Stabilization System Proposed for Britain

A self-financing price stabilization scheme for eggs has been submitted for consideration by leading egg packers to the British Eggs Authority. The scheme would work in a way similar to the EEC Market Support Price System in that a target price, based on past and likely future trends, would be decided. If market prices fall below the target indicator price, members would be able to claim for the difference from a central compensation fund, financed by contributions from the members.

In this way, the scheme would not become a liability on the Exchequer and it is claimed that it would protect egg producers from the wild fluctuations that have been a feature of the free market which came into existence with the termination of the British Egg Marketing Board on the 1st of April 1971.

Although some views have been expressed that it is against the interests of consumers who are also represented on the British Eggs Authority, it is pointed out that if the present trend of low prices continues, a number of producers would go out of business, and higher prices would result from the shortage of supplies. [Canadian Commercial Officer (Agriculture), London]

Oilseeds

Italy - Oilseed Imports

Italian imports of oilseed continue to expand rapidly in response to demand for both oil and, more particularly, for meal. Soybeans dominate the trade although increases in other seeds can be expected depending upon price relationships. A sizeable increase in rapeseed imports last year reflects a growing interest for this seed, primarily for oil, as rapeseed meal has not become widely known nor accepted.

The short-term outlook for sales of Canadian flaxseed appears normal, with the market stable. The same cannot be said for rapeseed. A general tendency to over-supply in Europe last year coupled with recent activities in France which have restricted oil usage in that country, has resulted in a surplus of oil. Prices have fallen to a point where rapeseed oil is being offered at discounts of up to \$10 under soybean oil.

Restricted use in France will probably result in more seed and oil being made available to other EEC markets and this will depress demand for products from third countries. The fact that meal is not widely used in Italy has meant rapeseed is sold primarily for oil. Should the meal market become firm, it would offset sagging oil prices. [Canadian Commercial Officer, Rome]

EEC's Importance on the World Olive Oil Market

The EEC plays an important part on the world olive oil market. Apart from producing quite a considerable quantity itself, it consumes almost half of world olive oil production. Exports to the USA, the EEC's principal market, recovered in 1970-71. Intra-EEC trade which is quite stable represents only a small percentage of total EEC trade.

The principal producing countries are Spain, followed by Italy, Greece, Turkey, Tunisia, Portugal and Morocco. French production has been practically non-existent since 1956 when frost destroyed most of the plantations and now averages only 200 tons per season. Italian production remains quite high in spite of a decrease for 1970-71.

In recent seasons world prices have moved increasingly towards the EEC threshold price which has meant a rapid decline in levies from \$12.6 per 100 kg in 1966-67 to \$0.248 in 1970-71. According to the Commission this proves that the common marketing regulation has had a regulating effect on world markets. [Agra Europe, May 24, 1972]

New Zealand - Oilseed Imports

There is no commercial production of oilseed crops in New Zealand for oil extraction. Soya beans are produced on a very limited acreage primarily as a food product. Rapeseed is grown extensively but only as a forage crop. Furthermore, there are no sizeable crushing facilities and most vegetable oil requirements are imported in the form of oil.

During the importing year July 1970 to June 1971, the value of imported vegetable oils, both edible and inedible, was \$3,120,000. As has been the case in the past, soybean oil (\$1,122,000) and peanut oil (\$513,000) were the two major oils imported. Total imports of rapeseed, colza and mustard seed oils were \$151,000, with Sweden being the main supplier. The Netherlands and the Federal Republic of Germany are the principal exporters of most other vegetable oil. [Canadian Assistant Commercial Secretary, Wellington]

Fruits and Vegetables

U.S. Exports of Canned Fruits and Vegetables Declined in 1971

U.S. exports of canned fruits and vegetables continued to decline during 1971. Prices of some major 1971 pack

items were higher and shipments were dampened additionally by the West Coast dock strike during late 1971. Exports totaled \$71.0 million, 11 percent below 1970 and 18 percent below the 1965-69 average. Exports of canned fruit totaled \$50.3 million and canned vegetables \$20.6 million.

Smaller shipments of the major canned fruit items cut fruit exports to \$50.3 million, 11 percent below the 1970 total of \$56.8 million, and it was the lowest level since 1968. Peach exports totaled \$17.8 million, 14 percent below 1970 and 11 percent below average. Canada and West Germany were the leading markets for peaches; the two countries purchased 65 percent of all shipments to foreign markets.

Exports of fruit cocktail also declined to \$14.3 million and pineapple dropped to \$10.5 million. Canada was the most important market for fruit cocktail, taking a total of \$6.4 million. Fruit cocktail exports to Belgium-Luxembourg and West Germany dropped sharply. West Germany, France and Canada are the major pineapple markets.

Substantially lower European purchases of asparagus and lower Canadian purchases of tomato paste cut U.S. exports of canned vegetables to \$20.6 million. Soups, corn, canned tomatoes, asparagus and tomato paste are primary vegetable items. Canada was the major market for tomato products. Hong Kong is the leading market for soup and Europe the top market for asparagus and corn. [USDA, Foreign Agricultural Circular, Canned Fruit, June 1972]

Japan - Strawberry Production

Japanese strawberry production has expanded steadily in past years. In 1965, 75,500 tons were harvested and by

1970 this figure was already 133,000 tons. By using plastic, the harvest can be extended throughout the whole year. The largest crop, however, comes between the months of April and June.

The main market for Japanese strawberries has been New Zealand and the USA, taking 1,263 and 4,836 tons respectively in 1971. The Japanese deep freeze industry is being expanded. In 1970, 1,500 tons of strawberries were deep frozen in Japan. It is estimated that within the next five years the Japanese will be supplying European markets with frozen strawberries. [Agra Europe, June 14, 1972]

Special Products

Hungarians Develop High Protein Mushroom

Following a Hungarian invention, the French firm Disdier will shortly begin the large scale cultivation of the *Pleurotus* mushroom. This protein rich mushroom species is rarely found in nature, but Hungarian experts have developed a *Pleurotus* stock which, given the proper foster-earth and climatic conditions, will yield a high crop. Hungarian agricultural engineers and chemists first experimented with felled tree trunks, then in closed areas with a special foster-soil made up of various agricultural wastes, and succeeded in growing *Pleurotus* on a large scale.

In Hungary, the first *Pleurotus* farm will be set up near Szeged. Several foreign firms have shown interest in the propagation method of this kind of mushroom. The Licencia Hungarian Company for the Commercial Exploitation of Inventions - in addition to the Disdier firm-has also concluded an agreement in Italy for the organization of its cultivation. [Agra Europe, June 1, 1972]

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Available from Information Division, Agriculture Canada, Ottawa, Canada, K1A 0C5

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map, graphs, photos. Bilingual. Farm Credit Corporation, Halldon House, P.O. Box 6309, Postal Station "J", Ottawa. K2A 3W9.

Lowbush Blueberry Production. Prepared in the Research Station, Kentville, N.S. V. Hall et al. Ottawa, 1972. 42 p. Also French. Pub. No. 1477. Free.

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Available from Information Canada, 171 Slater Street, Ottawa, K1A 0S9

Foreign Direct Investment in Canada. Ottawa, 1972. 523 p. Tables. Also French. Cat. No. C.P.32-15/1972. Price \$5. In the spring of 1970, the Honourable Herb Gray, P.C., M.P., was given the responsibility of bringing forward proposals on foreign investment policy for the consideration of the government. To assist him in this task, a working group was later established by the government to prepare background material and to examine certain factors which should be taken into account in the government's consideration of this issue. This document, prepared by the working group, is being published to help public understanding and discussion of the matter.

Search Behaviour in Canadian Job Markets. Dennis R. Maki. Economic Council of Canada, Special study no. 15. Ottawa, 1972. 99 p. Cat. No. EC22-2/15. Price \$1.50. Contents: Introduction; Theoretical considerations regarding worker search behaviour; Theoretical considerations regarding employer search behaviours; Empirical evidence on worker search behaviour; Empirical evidence on employer search behaviour; Conclusions and recommendations for further research.

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Available from the Department of Industry, Trade and Commerce, Production and Planning Division, Publicity Branch, 112 Kent Street, Ottawa, Ontario, K1A 0H5. Most of these publications are free of charge.

Canada Commerce is published monthly and is sent without charge to Canadian producers of goods or services. Others may have the magazine at \$5 a year in Canada, \$7 abroad. Single copies 60 cents each. Forward orders, with cheque or money order made out to the Receiver General of Canada, to "Canada Commerce", Department of Industry, Trade and Commerce, Ottawa, Ontario, K1A 0H5. Publié aussi en français.

DIP 1970 8p; bilingual edition (English, French). Brochure describes Department of Industry, Trade and Commerce's Defence Industry Productivity Program of assistance for all phases of Canadian secondary industry to increase competitiveness in defence export programs.

Doing Business in Canada 1970; 119p; (10 books); tables, illus.; English, French, German. Ten booklets introduce businessmen to Canadian business methods and outline laws, customs, tariffs, taxation, assistance programs and construction standards.

Federal Services for Business 1970; 80p; illus.; English, French. Designed to help Canadian businessmen make maximum use of federal assistance. Booklet describes services offered by 19 government departments and agencies.

Financing Canadian Industries 1970; 16p; English, French. Booklet examines types and sources of financial assistance available to Canadian entrepreneurs, including aid programs from federal and provincial governments.

GAPP 1970; 7p; bilingual edition (English, French). Brochure describes General Adjustment Assistance Program to help Canadian manufacturers adapt to changing trade patterns as a result of Kennedy Round agreements.

Guide to Business Education Programs at Canadian Universities 1970; 203p; tables; English, French. Book acquaints Canadian industry with management training facilities.

IDAP 1970 23p; charts; bilingual edition (English, French). Brochure describes the Department of Industry, Trade and Commerce's Industrial Design Assistance Program to improve the quality of Canadian product design.

Industry, Trade and Commerce at your Service 1971; 52p; English, French. Pocket-sized brochure describes the Department of Industry, Trade and Commerce's programs and services to assist Canadian business and industry.

IRDIA 1971; 94p; charts; bilingual edition (English, French). Brochure explains how corporations can apply for grants under the Industrial Research and Development Incentives Act to undertake scientific research and development in Canada.

PEP 1970; 20p; bilingual edition (English, French). Brochure describes Department of Industry, Trade and Commerce's Program to enhance Productivity to assist Canadian manufacturing and processing industries increase production efficiency.

Quick Reference on Incentive and Development Programs for Canadian Industry 1970; 23p; bilingual edition (English, French). Pocket-sized booklet lists and describes 10 Department of Industry, Trade and Commerce's programs to encourage research, development and innovation in Canadian business and industry.

Apples from Canada 1965; 20p; illus.; English, French, Spanish, Norwegian, Swedish. Full-color brochure describes varieties of Canadian apples and their progress from orchard to export market.

Application of Computers to Formulation of Animal Feeds from Small and Medium Volume Producers 1969; 170p; tables; charts; English. Designed for Canadian feed mill users, manual outlines computer-assisted system for animal feed formulation.

Brand Canada 1970; 10p; tables; illus.; English, Spanish. Full-colour booklet on Canadian beef cattle industry describes breeds available for export.

Canada Certified Seed Potatoes 1965; 16p; tables; illus.; French, Spanish, Italian, Greek, Portuguese. Four-colour brochure describes quality and variety of Canadian field-proven seed potatoes.

The Canadian Dairy Industry 1969; 50p; tables; English, French. Statistical survey of Canadian dairy processing and manufacturing. It also compares production, utilization, consumption, imports and exports with other countries.

Canadian Sphagnum Peat Moss 1969; English; for foreign market. Four-colour banner and folder illustrate wide variety of uses for Canadian sphagnum peat moss.

Canadian Swine 1971; 20p; tables; illus.; English. Full-colour booklet describes Canadian swine breeds, breeding methods and performance testing procedures that have made stock world famous.

Central Processing of Meats, Part I - Europe 1969; 52p; tables; illus.; bilingual edition (English, French). Booklet surveys European centralized meat processing and distributing techniques for possible application in Canada.

Central Processing of Meats, Part II - U.S.A. 1971; 56p; tables; illus.; bilingual edition (English, French). This is a survey of centralized meat processing and distributing techniques in the United States for possible application in Canada.

The Current Status of Fish Protein Concentrate 1970; 26p; tables; charts; English. Pamphlet examines emerging Canadian fish protein concentrate industry, its potential market and the techniques necessary to exploit it.

Developments in the United States Food Market and Their Significance for Canadian Groundfish Products 1970; 70p; tables; English, French. Survey of American retail and food service market, especially fish and chip industry. Designed to assist Canadian groundfish producers adapt to new market conditions in the United States.

Fats and Oils in Canada Annual Review, 1969 1970; 119p; tables; charts; English, French. Statistical review of Canadian fats and oils industry. It also describes new developments affecting industry.

Further Data on the Processing of Canbra Oil and Its Utilization in the Manufacture of Some Shortenings and Margarines 1970; 12p; tables; English. Paper presents results of experiments to determine the usefulness of Canbra oil as an edible substitute for rapeseed oil.

Processing of Cheese Whey in Canada 1969; 40p; tables; English, French. Report studies cheese whey processing methods and examines their possible use in Canadian manufacturing industries as an alternative to costly disposal as waste.

The Progenitors 1971; 20p; tables; illus.; English, French, Spanish, Italian, German, Portuguese. Brochure describes practical genetics ("Progeny Proving") program developed by Canadian cattle breeders to improve herd quality for semen export.

Report of the New Dairy Products Technology Mission to Europe 1970; 70p; illus.; charts; English, French. Purpose of dairy industry mission was to examine new European dairy machinery products for possible manufacture in Canada.

Substitute Dairy Products and Their Effect on the Canadian Dairy Industry 1968; 130p; tables; English,

French. Prepared for the National Dairy Council of Canada, report surveys market for substitute dairy products and the possible effect on the Canadian dairy industry.

Variety Cheese in Canada 1970; 60p; tables; English, French. Report examines production and imports of variety cheese, identifies problems and proposes solutions to stimulate Canadian production. List of Canadian cheese manufacturers and their products is included.

Construction Information 1970; 30p; tables; charts; illus.; English, French. Booklet describes results of BEAM Program study to improve information organization, dissemination, storage and retrieval techniques in Canadian construction industry.

The Office - Envrionmental Planning 1969; 49p; charts; illus.; bilingual edition (English, French). Price \$1.75. Illustrated booklet was designed to assist managers to plan office space. Bibliography is included.

Annual Report of the Department of Industry, Trade and Commerce, April 1, 1969 to March 31, 1970 1971; 116p; tables; English, French. First report of the Department of Industry, Trade and Commerce describes its industry, trade and tourist development programs, policies and activities and lists domestic and foreign personnel.

Packaging Machinery and Equipment from Canada 1969; 15p; charts; English. Brochure lists 21 Canadian packaging machinery manufacturers and describes their products.

Directory of New York Buyers for Export 1969; 71p; English, French. Directory gives Canadian exporters names, addresses, references, markets and types of products handled by New York exporters who transact Canadian business abroad.

How to Win World Markets 1967; 216p; tables; charts; English, French. Price \$4.95. A reprint of articles from **Foreign Trade**, a Department of Industry, Trade and Commerce publication, outlining how Canadians can capitalize on the export market. It includes a bibliography on export trade.

Markets for Canadian Exporters - Germany 1971; 62p; tables; bilingual edition (English, French). Booklet describes the country, its business methods and social conventions, Canadian-German trade patterns and includes lists of trade officials.

Markets for Canadian Exporters - Japan 1970; 41p; tables; English, French. Booklet describes Japan, its business methods, protocol and import potential, lists Canadian imports, exports; Japanese companies and officials, and provides businessmen's bibliography.

Markets for Canadian Exporters - Mexico 1971; 46p; tables; bilingual edition (English, French). Booklet describes Mexico and its business methods. It also includes Canadian-Mexico trade statistics and gives names and addresses of trade officials.

Markets for Canadian Exporters - Peru and Bolivia 1970; 49p; tables; bilingual edition (English, French). Booklet describes the countries, their business methods and potential for imports. It lists Canadian imports and exports and includes names and addresses of trade officials.

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Available from the Publications Distribution Unit, Statistics Canada, Ottawa, Canada, K1A 0T7

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Wool Production and Supply. Prepared in the Livestock and Animal Products Section, Agriculture Division. Ottawa, 1972. 2 p. Bilingual. CS23-205/1971. Price 25¢ per copy.

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World Grain Trade Statistics 1970-71. FAO, Rome, 1972. 79 p. Tables, graphs. Cat. No. PS/C7145/5.72/EFS/1/4500. Price U.S.\$2.50

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IN REPLY TO AUTHORS AND EDITORS REGARDING AUGUST 72
CANADIAN FARM ECONOMICS

I have read the following article(s):

- (1) Using Computers in the Farm Business
- (2) CANFARM's Computerized Farm Records
- (3) Michigan's Purple Plums Affect Canadian Market
- (4) Potatoes . . . Harvesting Methods . . . Returns

My comments are on article number

This article was: not useful

1

2

3

4

5

6

7

8

9

10

 very useful.

Because (e.g., The most important economic and social factors were studied. The work was well documented and the conclusions were useful to me).

Beefs Bouquets (Suggestions to authors, publications committee and editors)

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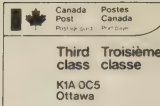
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VOLUME 7

NUMBER 4

OCTOBER, 1972

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Canadian Farm Economics is published bi-monthly by the Economics Branch, Canada Department of Agriculture, Sir John Carling Building, Ottawa, and is based on material prepared by economists of the Economics Branch.

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Letters from readers: Letters are encouraged and should be addressed to the author or to the Managing Editor. Responses . . . comments, suggestions and points of view are important for effective two-way communications. Letters may be used in the following issue of CFE and will be edited prior to publication where necessary.

CANADIAN FARM ECONOMICS

IN REPLY

At press time for the October issue, it is still too early to report to you on feedback from the questionnaire included in the last issue, so I'll try to bring you up to date on that in the next issue.

In recent weeks we have had enquiries from some farm organizations, economists and editors asking about the number of readers and the procedures involved in getting on the mailing list.

The largest groups of readers are administrators, followed by economists, farm leaders, extension workers, agribusiness people, libraries and university teachers... for a total of some 5,000 English and some 2,000 French readers.

Anyone who wishes to receive this publication regularly and who falls into one of the above groups should write me a letter and ask to be placed on the mailing list. These names are forwarded each month to the people who prepare and up-date the mailing list.

A response of 55 percent from a questionnaire is outstanding! That's what we got when we sent a questionnaire to the readers of this publication. The largest response came from readers in Ontario, in the Prairies and in other countries. We asked readers what percentage of CFE they usually read... 171, of those who replied, said they read all of it, 840 said they read half of it, 347 said they read a quarter of it and 65 of those readers who replied said that they read 10 percent of it. We reported this survey in the June issue of CFE in 1971.

Again I want to say that we encourage letters from readers and remember to look at the questionnaire on the last page of this issue.

So long for now.

A handwritten signature in dark ink, reading "John J. McConnell". The script is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

John J. McConnell, Managing Editor.

DAIRY PRICE SUPPORT IN CANADA, 1962-1972



V. McCormick*

The dairy enterprise provides nearly a quarter of Canada's farm cash receipts.

After decades of wide swings in production and prices, six provinces have agreed to a supply-management plan.

Canada is the first country to establish a national dairy market-sharing program, involving over 95 percent of manufacturing milk and cream production.

The Importance of the Dairy Industry

The dairy industry is probably the oldest agricultural industry in Canada. It has been associated with agriculture in all provinces and contributes greatly to the total economy. Farm cash receipts from the sale of milk and cream (including subsidies) in 1971 amounted to \$805 million — larger than from the sale of wheat. If the estimated farm cash income from the sale of animals from dairy herds is added to the income from dairy products, the total farm cash receipts are about \$1.1 billion dollars, or about 24 percent of cash receipts from all farming operations.

In 1971, income from the sale of dairy products was the most important single source of farm cash receipts in Quebec, British Columbia and Nova Scotia and the second most important source in Ontario and New Brunswick. With subsidies included, Quebec received 45 percent of total farm cash receipts from the sale of dairy products, Nova Scotia 30 percent, British Columbia 24 percent and New Brunswick 23 percent. Dairying contributes to the greater part of farm cash receipts in areas where few or no alternatives exist. The 1971

Census shows that 145,318 farmers in Canada, or 40 percent of all farmers reporting, kept milk cows.

Changes in Production and Consumption Trends

Milk production in Canada started to move upwards in the early 1950's, largely as the result of technological advances, particularly better breeding, feeding and management practices. In the late 1950's, there was a downward trend in domestic utilization on a milk (fat) equivalent basis, brought about by a decline in butter consumption and consumers' preferences for partly skimmed (2 percent) milk. The trend away from shipping farm-separated cream to whole milk for the manufacture of butter resulted in large increases in output of skim milk powder at factories across Canada. As a result of diverging production and consumption patterns, large stocks of butter and skim milk powder accumulated.

It was necessary to dispose of surplus stocks of dairy products on world markets, generally at lower prices than on the home market. This involved heavy export subsidies at certain times, particularly for butter in 1964 and skim milk powder from 1967 to 1970. Other products which required export assistance from time to time were cheddar cheese, concentrated whole milk products and casein. (No subsidies were required on

*Miss McCormick is the dairy specialist in the Branch. She and the other Outlook economists are currently preparing reports for the Outlook Conference, November 21 and 22.

Table 1 — Total Milk Production, Domestic Disappearance, Exports and Imports in Terms of Whole Milk, Canada, 1962-71

Year	Total Milk Production	Total Consumption ^a	Imports ^b	Exports ^c	Balance ^d
— million pounds —					
1962	18,382	17,293	161	493	+757
1963	18,432	18,079	170	881	-358
1964	18,505	18,275	168	3,183 ^e	-2,785
1965	18,357	18,378	194	646	-473
1966	18,373	18,227	201	476	-129
1967	18,208	18,191	313	343	-13
1968	18,362	18,131	375	488	+118
1969	18,711	18,038	344	341	+676
1970	18,313	18,425	337	356	-131
1971	17,777	18,674	380	436	-953

^aHuman consumption plus fed to livestock.

^bLargely specialty-type cheeses and butter in milk equivalent.

^cButter, butter oil, cheese and concentrated whole milk products in milk equivalent.

^dExcludes stocks of dairy products.

^eIncludes exports of butter and butter oil equal to 114 million pounds of butter.

cheddar
cheese
exports of 1971 production due to an improvement in world prices, brought about by shortages of dairy products).

Milk production in Canada rose to a record high of 18.7 billion pounds in 1969. However, declines occurred in 1970 and again in 1971, when output at 17.8 billion pounds was at the lowest level in more than a decade. Total domestic disappearance of milk and dairy products has been increasing on a milk fat basis since 1967, necessitating imports of butter in 1971 and 1972. Production of solids - not - fat greatly exceeds domestic use and the surplus is exported in the form of skim milk powder.

History of Dairy Price Supports

Federal programs to support certain dairy products were initiated during the depression years of 1935 and 1936 in an attempt to minimize price movements and to give producers better returns. Subsidies were paid again during the later years of World War II and the immediate post-war years as an incentive to increase production and at the same time to avoid general price increases to consumers. During this period, the dairy industry in North America was encouraged to increase output to meet the food requirements of Europe. Canada's contribution was largely cheese for the United Kingdom.

The Canadian government made commitments during the war years to support post-war agricultural prices and income in an effort to prevent a farm price collapse similar to that which occurred after World War I. In

1944, an Act "for the support of the prices of agricultural products during the transition from war to peace" was passed. The Agricultural Prices Support Board, which administered the Act, became operative in 1946, although no large scale purchases of dairy products occurred until 1949. The Board had at its disposal a revolving fund of \$200 million as working capital. Net losses to the fund resulting from price supports of farm products were compensated by annual votes of Parliament; net operating profits were paid annually into government revenue.

The Agricultural Stabilization Act superseded the Agricultural Prices Support Act in 1958 and the Agricultural Stabilization Board became the new administrative agency. The Agricultural Stabilization Board was given the duty to guarantee the prices of butter and cheese, among other key commodities, each year at a level equal to 80 percent of the average price realized over the preceding ten years. The support price can exceed this level if the federal government so decides on the basis of the estimated average cost of production and such other factors as considered relevant. The revolving fund was increased to \$250 million - \$50 million more than the fund at the disposal of the old Agricultural Prices Support Board.

An Act establishing the Canadian Dairy Commission was proclaimed on October 31, 1966 and the Commission was appointed in December. The Commission assumed the responsibility of administering the price stabilization program beginning with the 1967-68 dairy support year. It has the power to administer federal government support funds.

Table 2 — Support Prices of Butter, Cheese, Dry Skim Milk and Manufacturing Milk, Canada, 1962-1972

Dairy Year	Butter	Cheddar cheese	Dry Skim Milk	Manufacturing Milk
	— cents per pounds —			\$ per 100 lbs (3.5% butterfat)
1962-63	64.0 ^a	32.5	e	2.62 ^f
1963-64	64.0 ^a	32.5	e	2.86 ^f
1964-65	64.0 ^a	32.5	e	3.16 ^f
1965-66	64.0 ^a	35.0	e	3.52 ^f
1966-67	59.0	38.0	e	4.10 ^f
1967-68	63.0	38.0	20.0	4.75 ^g
1968-69	63.0-65.0 ^b	42.0-47.0 ^d	20.0	4.85 ^g
1969-70	65.0	42.0-47.0 ^d	20.0	4.85 ^g
1970-71	65.0	42.0-47.0 ^d	20.0	4.85 ^g
1971-72	65.0-68.0 ^c	51.0-54.0 ^c	24.0-26.0 ^c	5.14 ^g
1972-73	68.0	54.0	29.0	5.65 ^{g h}

^aProducer support consisted of a butter "offer-to-purchase" price plus a subsidy on butter: 1962-63 and 1963-64, 52¢ plus 12¢ subsidy; 1964-65, 53¢ plus 11¢; 1965-66, 55¢ plus 9¢.

^bPrice change effective September 30, 1968.

^cPrice changes effective August 16, 1971.

^dPrice range according to season of production.

^eNo support price as such; periodic purchases were made by the Agricultural Products Board, depending on supplies and market price levels. The Board was authorized to purchase dry skim by tender at prices not exceeding 8.5¢ in 1962-63; 11.0¢ in 1963-64; and 18.0¢ in 1966-67. No purchases were made in 1964-65 and 1965-66.

^fDerived value — Average returns to producers plus subsidies.

^gMarket support plus subsidies (excluding holdbacks).

^hMarket support and subsidies equivalent to \$5.39 at August 16, 1971.

The federal government, through the Canadian Dairy Commission, currently supports the dairy industry by "offer-to-purchase" programs for dairy products and direct subsidy payments to producers of manufacturing milk and cream. It also assists, through the Canadian Dairy Commission, in exporting surplus dairy products.

The support program has been re-inforced since July 1951 by import controls. Under the Export and Import Permits Act, a product may be placed on the Import Control List to implement any action taken to support the price of the product or has the effect of supporting the price of the product. Butter was placed under import control during the summer of 1951. Dairy products currently under import control are: butter, butterfat in any form, cheese of all types, evaporated and condensed milks, dry buttermilk, dry casein and caseinates, dry whole milk, dry skim milk, dry whey and animal feeds containing more than 40 percent solids-not-fat. In effect, no product on the Import Control List can be imported without a permit from the Department of Industry, Trade and Commerce. Permits are issued freely for

natural cheese, other than cheddar and Colby for direct consumption, traditional imports of processed cheese and casein for industrial use.

Present federal dairy policy was designed to provide efficient producers of milk and cream with the opportunity of obtaining a fair return for their labor and investment and to provide consumers with a continuous and adequate supply of high quality dairy products.

Dairy Supports

Until the dairy year 1966-67, the emphasis on dairy support in Canada had been on support of product, particularly butter and cheddar cheese. It was assumed that 100 pounds of milk manufactured into cheese would be approximately equal in value to 100 pounds of milk made into butter and skim powder. Competition for milk for other manufactured products, for example evaporated whole milk and whole milk powder, kept prices for milk going into these products in line with butter and cheese milk.

Federal policy action to encourage domestic consumption in an effort to reduce a large build-up of butter stocks was initiated in 1962-63 and continued through 1965-66 (Table 2). This program consisted of producer support plus a subsidy on butter. For example, in 1962-63 and 1963-64 the butter support price was 64 cents per pound, the government "offer-to-purchase" price 52 cents and the subsidy, which was really a subsidy to consumers, was 12 cents. There were also heavy subsidies on exports of butter and butter oil in 1963-64 and 1964-65. In 1964, exports of these two products were equal to 114 million pounds of butter or the equivalent of about 2.7 billion pounds of milk.

A new program, designed to raise the average returns to producers to \$3.50 per 100 pounds for domestically - used manufacturing milk, was introduced in 1965-66. A deficiency payment plan on milk, together with direct subsidy and export assistance, was used to bring the average price to \$3.30 and a supplementary payment was made to all farmers who marketed over 10,000 pounds of milk in the previous dairy year. This was the first time that very small volume producers were eliminated from subsidy payments. (As the weighted average price at processing plants was \$3.32, no deficiency payment was made).

Despite federal government measures, the market price to producers was not considered sufficient to compensate for their increased costs and in 1966-67 a direct subsidy to manufacturing milk and cream producers was introduced. The deficiency payment plan and the butter

subsidy, as such, were discontinued. In order to finance the exports of dairy products surplus to domestic requirements, a holdback was made from subsidy payments (Tables 3 and 4).

The Canadian Dairy Commission introduced subsidy eligibility quotas in 1967-68 in an attempt to keep milk production within the bounds of commercial outlets. Each producer who had delivered manufacturing milk or cream in 1966-67 was allotted a subsidy quota for 1967-68 equal to the amount of his previous year's deliveries. This was the first time that dairy support measures had been designed to equate milk production with market requirements. Previous dairy support measures generally had placed no restraints on the amount of product eligible for support.

Table 3 — Subsidy Payments to Manufacturing Milk Producers and Holdbacks and Levies, Canada, 1962-1972

Dairy Year	Subsidy payments	Holdback from subsidy within quota	Holdback for over-quota deliveries	Levies in market quota areas
\$ per 100 pounds of milk				
1962-63	0.25 ^a	—	—	—
1963-64	0.30 ^{a b}	—	—	—
1964-65	^a	—	—	—
1965-66	0.20 ^{a c}	—	—	—
1966-67	0.85	0.10 ^d	—	—
1967-68	1.21	0.11	—	—
1968-69	1.31	0.15	—	—
1969-70	1.25	0.26	0.52	—
1970-71	1.25	0.26	1.25	2.40
1971-72	1.25	0.10	1.05 ^e	2.05 ^f
1972-73	1.25	0.10	1.05	1.50 ^g

^aExcludes subsidies paid on butterfat for the manufacture of butter as follows: 1962-63 and 1963-64, 50.75 cents per 100 pounds of milk; 1964-65, 46.55 cents; 1965-66, 38.15 cents.

^bFor cheddar cheese only, at factories.

^cAn average of 20 cents per 100 pounds was paid as a supplementary payment on the previous year's milk deliveries.

^d2.7 cents rebated for 1966-67 — no direct quotas in effect.

^eApril 1 — May 31, 1971, \$1.25.

^fApril 1 — May 31, 1971, \$2.40.

^gMinimum rate.

In order to encourage development of a more efficient dairy industry, no subsidy quotas were allotted in 1968-69 to producers whose deliveries the previous year were less than 12,000 pounds of milk or 420 pounds of butterfat. These producers received a phasing-out payment equal to the 1968-69 subsidy rate for the individual producer's 1967-68 deliveries of milk and cream.

Table 4 — Subsidy Payments to Cream Producers, Holdbacks and Levies Canada, 1962-1972

Dairy Year	Subsidy payments	Holdback from subsidy within quota	Holdback for over-quota deliveries	Levies in market quota areas
— cents per pound butterfat —				
1962-63	14.5	—	—	—
1963-64	14.5	—	—	—
1964-65	13.3	—	—	—
1965-66	10.9	—	—	—
1966-67	24.29	—	—	—
1967-68	34.57	3.15	—	—
1968-69	37.42	1.0	—	—
1969-70	35.71	1.0	—	—
1970-71	35.71	1.0	8.0	—
1971-72				
Apr. 1-May 31	35.71	—	8.0	50.0
June 1-Mar. 31	35.71	—	5.0	30.0
1972-73	35.71	—	5.0	22.0 ^a

^aMinimum rate.

Market-Sharing Plan

As fluid milk marketing is under the jurisdiction of the provinces, the federal government as a rule does not pay subsidies on milk produced by fluid milk shippers which is surplus to fluid sales. Where a pooling system is in operation, however, fluid milk producers receive federal subsidy on a portion of their milk used for manufacturing purposes. Except in pooling areas, fluid shippers did not share in the costs of export equalization until a market-sharing plan was instituted. Until federal-provincial agreements were finalized, there was no equitable method of making collections from fluid milk shippers.

A comprehensive milk marketing plan was agreed to by the Canadian Dairy Commission and the milk marketing agencies of Ontario and Quebec in January 1971. (The program had started operating on December 1, 1970). The plan encompassed a market-sharing quota system for industrial milk and that portion of milk shipped by fluid producers which is used for manufacturing purposes. The agreement also covered cream shippers in Quebec, and shippers in Ontario entered under the plan on April 1, 1971. Prince Edward Island was the third province to enter into the program, which became operative in that province on December 6, 1971. Producers in Alberta entered on April 1, 1972. Manitoba and Saskatchewan came under the program on July 1, 1972. With the three Prairie Provinces joining Prince Edward Island, Quebec and Ontario, more than 95 percent of the manufacturing milk and cream sold in Canada came under the market-sharing program.

Table 5 — Creamery Butter and Skim Milk Powder Removed from the Market Through Price Support and Related Programs, Canada, 1962-63 to 1971-72

Dairy Year	Butter			Skim Milk Powder		
	Federal Agency Purchases ^a	Total Butter Production ^b	Purchases as Percentage of Production	Federal Agency Purchases ^a and Export Assistance	Total Skim Powder Production ^b	Purchases & export assistance as percentage of Production
	— million pounds —		%		— million pounds —	
1962-63	90.5	361.7	25	34.3	192.3	18
1963-64	71.7	351.9	20	19.1	176.1	11
1964-65	86.0	351.7	24	25.3	203.0	12
1965-66	65.0	337.4	19	53.4	222.1	24
1966-67	63.2	333.9	19	81.1	263.5	31
1967-68	80.5	329.9	24	200.9	316.1	64
1968-69	82.4	335.9	24	198.0	360.4	55
1969-70	97.5	350.0	28	244.9	395.1	62
1970-71	67.6	327.8	21	216.4	362.4	60
1971-72	44.6	286.8	16	114.8	301.1	38

^aAgricultural Stabilization Board and Agricultural Products Board to 1966-67; Canadian Dairy Commission from 1967-68 to present. Fiscal years.

^bCalendar year.

With the market-sharing arrangement, each producer received a marketing quota based on previous deliveries or his subsidy eligibility quota - the greater of the two at the time of entry. He receives a market price related to Canadian price support levels for deliveries up to his market share. Prices for deliveries over market share are related to world prices for surplus dairy products. There is a minimum charge for excess deliveries. (The minimum for excess deliveries in 1972-73 is \$1.50 per 100 pounds of milk and 22 cents per pound of butterfat on farm-separated cream).

Under the market-sharing system, instead of the hold-back from subsidy payments, there is a levy on the market price paid to producers (Tables 3 and 4). The levies are collected by provincial agencies and submitted to the Canadian Dairy Commission to defray the costs of surplus disposal. Provinces that do not come under the market-sharing program continue to have holdbacks deducted from subsidy payments.

Product Removed From The Market Through Federal Assistance.

The offer-to-purchase program stabilizes the market for dairy products by preventing severe fluctuations in price and supply. This, in turn, has a stabilizing effect on consumption. Under the price support program, creamery butter and skim milk powder are the products which in recent years have generally been purchased on a regular basis as instruments of the dairy price support program. Cheddar cheese is also acquired by government

agencies for market support when necessary. Butter is usually sold back to the domestic trade. Skim milk powder and cheddar are as a rule offered for commercial export or food aid programs.

World prices for dairy products are usually well below the Canadian support levels, thus exports by the trade generally require financial assistance. If assistance is required to move a dairy product to export markets, it is made from the Export Equalization Account, which is administered by the Canadian Dairy Commission, and funded in recent years, by holdbacks and levies from producers' cheques.

Creamery butter purchases through federal agencies have averaged about one quarter of annual production in the last decade (Table 5). Purchases of skim powder and product removed from the market through export assistance have fluctuated from about 11 percent to over 60 percent of total annual production. In recent years, the federal government has assumed the storage costs of dairy products purchased under the price support program.

Costs of Dairy Support Programs

Total expenditure on supporting the dairy industry since the Canadian Dairy Commission was established has averaged about \$124 million annually (Table 6). This includes direct payments to producers, export subsidies, "offer-to-purchase" costs, phasing-out

payments to dairy producers (1968-69) and administration costs.

The Federal subsidy payments to producers of manufacturing milk and cream help to compensate producers for increased costs and also assist in preventing substantial retail price rises for dairy products.

Canada Unique

All major milk producing countries in the western world support their dairy industries in one way or another. Supports take the form of a wide range of operations such as guaranteed prices to producers for milk, consumer subsidies on milk and dairy products, direct government purchases and re-sale programs, subsidized exports, import controls, import levies, domestic welfare and school feeding programs, food aid to developing countries, etc. However, Canada is the first country to initiate a system of supply management by market-sharing in an attempt to balance total milk supply, on a butterfat basis, with domestic demand. Some European countries have attempted to accomplish this goal by structural adjustments at the farm level, such as cow

Table 6 — Net Cost of Dairy Industry Price Support Program, Canada, 1962-72

Dairy Year	Net Expenditure on Price Supports ^a
	— '000 dollars —
1962-63	59,703
1963-64	117,208
1964-65	53,960
1965-66	50,266 ^b
1966-67	77,787
1967-68	99,128
1968-69	136,951
1969-70	151,567
1970-71	113,806
1971-72	119,400 (est.)

^aExcluding administrative cost.

^bIncludes supplementary payments of \$19.2 million.

slaughter programs, subsidizing the utilization of milk on the farm for animal feeding, and retirement of farmers. Milk supply-management is currently a lively issue in the United States and is getting active attention from interested organizations in that country.

CANADIAN HOG PRICES WITHIN A NORTH AMERICAN MARKET



J.L. Dawson*

Canadian hog prices are largely determined in the American mid-west.

Tariff reductions and the increased value of the Canadian dollar have given more freedom to Canada-U.S. trade in live hogs and pork.

The price differential has narrowed and Canadian producers must compete in a free-wheeling North American hog market.

Hog prices in Canada reflect the basic price for market hogs as established in the midwestern United States. This is because of proximity to the U.S. market, two-way pork trade, and somewhat similar production and consumption patterns. Of the supply and demand for pork in North America, Canada accounts for approximately 10 percent, with the U.S. making up the balance.

This article attempts, in a brief way, to evaluate past Canadian and U.S. hog price relationships and to observe how changing exchange rates and tariff structures have influenced the Canada-U.S. price differential.

Supply-Consumption Relationships

The relative size of Canadian and U.S. hog production shows the small share that the Canadian pork industry has of the North American market. The Canadian share has not changed significantly since 1960. Of the total North American inspected hog slaughter, Canada accounted for 9.3 percent in 1960, 10.0 percent in 1965, and 10.4 percent in 1971. On a product basis, the

Canadian share is approximately one percent less (e.g. 9.4 percent in 1971) because average carcass weights in the U.S. are generally about twenty pounds heavier than Canadian carcasses.

In 1971, Canadians consumed 1.4 billion pounds of pork or 65.9 pounds per capita, while U.S. consumption was 14.8 billion pounds or 72.8 pounds per capita. In 1960, total consumption in Canada was 939.8 million pounds and 11.5 billion pounds in the U.S. On a North American basis, Canada accounted for 8.7 percent of the total pork consumed in 1971. There is some evidence to suggest improvement in per capita demand for pork in Canada relative to the U.S. demand. In 1960, U.S. per capita consumption was 12.3 pounds higher, 10.6 pounds higher in 1965, and only 6.9 pounds higher in 1971.

Canada-U.S. Price Relationship

Empirical evidence indicates there is a close relationship between the pattern of seasonal and yearly hog slaughter in Canada and the U.S., and that there is an even stronger relationship between price changes in the two countries. Percentage changes in quarterly prices and slaughter in Table 1 indicate that the patterns of slaughter in both countries are not as closely related as are the corresponding price levels. Although Canada's

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TABLE 1 – QUARTERLY HOG PRICES AND GRADINGS IN CANADA AND UNITED STATES, 1969-1971

	Toronto		7 Midwest Markets (U.S.A.)		Canada		United States	
	Price (Dressed)	Change from Previous Year	Price (Live)	Change from Previous Year	Gradings	Change from Previous Year	Inspected Slaughter	Change from Previous Year
	Can. \$/cwt	percent	U.S. \$/cwt	percent	'000 head	percent	'000 head	percent
<i>1969</i>								
Jan.-Mar.	33.61	+19	20.27	+ 7	1,890.2	-15	19,867.6	+ 8
Apr.-June	34.19	+19	22.86	+18	1,885.1	-11	18,488.5	+ 3
July-Sept.	37.13	+11	26.28	+28	1,740.4	- 6	18,057.6	+ 2
Oct.-Dec.	37.81	+12	26.04	+42	1,965.8	+ 1	19,268.5	- 6
Year	35.70	+16	23.68	+23	7,481.5	- 8	75,682.2	+ 1
<i>1970</i>								
Jan.-Mar.	38.34	+14	27.19	+34	2,057.2	+ 9	18,092.0	- 9
Apr.-June	33.40	- 2	23.86	+ 4	2,104.2	+12	18,239.8	- 1
July-Sept.	30.85	-17	22.53	-14	2,106.6	+21	18,852.9	+ 4
Oct.-Dec.	26.99	-29	16.42	-37	2,380.2	+21	23,002.1	+19
Year	32.20	-10	21.95	- 7	8,648.2	+16	78,186.8	+ 3
<i>1971</i>								
Jan.-Mar.	25.63	-33	17.62	-35	2,592.3	+26	22,133.9	+22
Apr.-June	23.74	-29	17.33	-27	2,645.8	+26	21,709.4	+19
July-Sept.	26.21	-15	19.27	-14	2,416.7	+15	20,520.8	+ 9
Oct.-Dec.	27.58	+ 2	20.06	+22	2,458.7	+ 3	22,305.9	- 3
Year	25.80	-20	18.45	-16	10,113.5	+17	86,670.0	+11

percentage changes in quarterly slaughter fluctuate more, the corresponding price changes compare closely to those in the United States. A correlation analysis on monthly data from 1969 through 1971 shows the relationship of slaughter volumes and hog prices in Canada and the U.S. for successive months. First, the correlation between the Canadian and United States price levels is much more significant (+.905)¹ than the correlation between slaughter levels (+.632). Second, the correlation between the Canadian price and Canadian slaughter (-.709) and Canadian price and United States slaughter (-.652) indicates that the Canadian price is influenced (inversely) by both Canadian and U.S. slaughter levels.

Correlation Matrix:

	Canada Price	U.S. Price	Canada Gradings	U.S. Gradings
Canada Price	1	.905	-.709	-.652
U.S. Price	-	1	-.602	-.789
Canada Gradings	-	-	1	.632
U.S. Gradings	-	-	-	1

Observation of Table 1 and the correlation matrix implies that the Canadian hog price is closely tied to

¹ $r = .90$, $R^2 = .81$. Interpreted: 81 percent of the fluctuation in the Canadian hog price is associated with fluctuations in the United States hog price.

changes in the U.S. hog price. A step-wise regression analysis was applied to the following monthly data for 1969 through 1971: the Canadian weighted average price for Index 100 hogs (Y), monthly Canadian hog slaughter (X_1) and the United States monthly hog price at the seven midwest markets (X_2). The objective was to evaluate the relative importance of the United States hog price and the level of Canadian hog slaughter as factors determining the Canadian hog price.

The regression equation:²

$$Y = 14.38 - .0113X_1 + .8435X_2 \quad (R^2 = .86)$$

The coefficient of X_2 indicates that a one dollar increase in the U.S. hog price will result in an increase of 84 cents in the Canadian price. In the same equation the coefficient of X_1 indicates that an increase of 100,000 head in monthly Canadian hog slaughter will decrease the Canadian hog price by \$1.13. The relative importance of these two variables plus the fact that Canada has only a small share of the North American market is evidence that the base price for Canadian hogs is largely determined by the United States price.

²Both X_1 and X_2 were significant at a one percent level. Standard errors: $X_1 = .0035$; $X_2 = .091$.

TABLE 2 – QUARTERLY PRICE DIFFERENTIALS AND CANADA–U.S. TRADE, 1969-1971

	Toronto Hog Price Over the 7 Midwest Markets		Imports from U.S.A.	Exports to U.S.A.	Trade Balance	Live Exports to U.S.
	Live(U.S.)	Dressed(U.S.)				
	Can. \$/cwt	Can. \$/cwt	'000 lb	'000 lb	'000 lb	'000 head
<i>1969</i>						
Jan.-Mar.	13.34	7.29	26,416.5	12,066.2	-14,350.3	2,074
Apr.-June	11.33	4.51	18,022.7	14,962.4	- 3,060.3	3,714
July-Sept.	10.85	3.00	11,195.1	10,463.5	- 731.6	3,545
Oct.-Dec.	11.77	3.99	11,267.5	10,961.6	- 305.9	6,453
Year	12.02*	4.95*	66,901.8	48,453.7	-18,448.1	15,786
<i>1970</i>						
Jan.-Mar.	11.15	3.03	6,681.3	12,416.9	+ 5,735.6	5,524
Apr.-June	9.54	2.41	2,940.7	17,420.7	+14,480.0	23,308
July-Sept.	8.32	1.59	5,526.6	15,727.5	+10,200.9	32,449
Oct.-Dec.	10.57	5.66	7,786.9	13,128.2	+ 5,341.3	11,477
Year	10.25*	3.69*	22,935.5	58,693.3*	+35,757.8	72,758
<i>1971</i>						
Jan.-Mar.	8.01	2.75	3,852.7	16,213.9	+12,361.2	17,904
Apr.-June	6.41	1.23	2,476.1	16,822.7	+14,346.6	22,990
July-Sept.	6.94	1.18	2,871.0	19,417.8	+16,546.8	27,663
Oct.-Dec.	7.52	1.53	4,750.2	13,903.1	+ 9,152.9	15,921
Year	7.35*	1.84*	13,950.0	66,357.5	+52,407.5	83,668

*Yearly averages

Recent Changes in Canada-U.S. Price Differential

Although the base price for all North American hogs is established in the U.S. midwest, recent changes in U.S. tariff rates and the Canadian exchange rate have altered the relationship of hog prices between the two countries.

As a result of tariff negotiations in the Kennedy Round, Canadian and U.S. tariffs for hogs and pork have been reduced (Table 3). Canadian tariffs were reduced on June 4, 1969, and U.S. reductions were implemented annually from 1969 through 1971. These tariff reductions have allowed for a freer movement of pork between the two countries. With the Canadian pork industry on an export basis, the Canadian "floor" price level has been increased due to lower U.S. tariff rates on fresh or frozen pork and live hogs from Canada. On an import basis, the Canadian "ceiling" price has been lowered because of Canadian tariff reductions on pork imports.

From 1962 to May 1970, the Canadian dollar was pegged relative to the U.S. dollar and averaged 92.5 cents in 1969. With the dollar at about 1.5 cents above

TABLE 3 – CANADA – U.S. TARIFF RATES ON LIVE HOGS AND PORK, 1969 – 1972

	Canadian Tariff	U.S. Tariff
<i>Live Hogs</i>		
Jan. 1, 1969	0.5¢/lb	0.8¢/lb
Jan. 1, 1970	0.5¢/lb	0.7¢/lb
Jan. 1, 1971	0.5¢/lb	0.6¢/lb
Jan. 1, 1972	0.5¢/lb	0.5¢/lb
<i>Pork, fresh or frozen</i>		
Jan. 1, 1969	0.5¢/lb	1.0¢/lb
Jan. 1, 1970	0.5¢/lb	0.8¢/lb
Jan. 1, 1971	0.5¢/lb	0.7¢/lb
Jan. 1, 1972	0.5¢/lb	0.5¢/lb
<i>Bacon and Hams</i>		
Jan. 1, 1969 not canned, cooked or boned	1.75¢/lb	2¢/lb
other	1.75¢/lb	3¢/lb
Jan. 1, 1970 not canned, cooked or boned	1.75¢/lb	2¢/lb
other	1.75¢/lb	3¢/lb
Jan. 1, 1971 not canned, cooked or boned	1.75¢/lb	2¢/lb
other	1.75¢/lb	3¢/lb
Jan. 1, 1972 not canned, cooked or boned	1.75¢/lb	2¢/lb
other	1.75¢/lb	3¢/lb

par now, the “floor” and “ceiling” prices for Canadian hogs have decreased. In other words, Canada should approach an import basis (ceiling price) at a lower Canada-U.S. price differential than compared with 1969 as an example. Conversely, the export basis (floor price) could be expected to be lower relative to the U.S. price than when the dollar was pegged. Partly offsetting the lower floor price is the reduction in U.S. tariff rates.

Summary

Analytical results indicate the importance of price influence from the United States and imply that the base price for the North American pork market is established in the United States. At the most, Canadian production levels can only shift the domestic price within a narrow range relative to the base price.

If the price influence from the United States is as strong as the analysis suggested, it is erroneous to attribute low

or high domestic hog prices directly to production levels in Canada.

If the Canadian hog industry’s main pricing function is in the determination of the price differential, could a supply management program aimed at altering the price cycle be effective? At most, a reduction in Canadian production can only move the industry to a net import basis.

The combined effect of lower tariff rates since 1969, the increase in value of the Canadian dollar since May 1970, along with the removal of federal hog premiums in December 1970, means that hog prices in Canada are more sensitive to U.S. hog prices than in 1969, for example. The main implication is that, in effect, Canadian hog producers are currently operating in a more competitive North American pork industry than at any time during the 1960’s.

PERSPECTIVE ON THE CANADIAN SHEEP INDUSTRY

Canadian sheep growers are now supplying only 20 percent of the Canadian market for sheepmeats.

Consumers are faced with sporadic supplies, and extremes in price and quality.

New Zealand will continue to dominate the Canadian market, unless Canadian producers and marketers improve their product and service.



*O.G. Dawson**

Canada's sheep industry continues to be plagued with a declining share of the domestic market for mutton and lamb. During the ten-year period ending December 31, 1971, farm output of slaughter sheep and lambs fell by more than 50 percent, reducing the industry's share to 20 percent of the annual supply of sheepmeats. A sizeable growth in imports has been necessary to maintain existing consumption rates (Table 1).

World Production and Trade

Sheep can be raised successfully over a wide range of climatic conditions, although the greatest numbers are reported by countries in the more temperate regions of the world. Fourteen countries have approximately 70 percent of the world's total sheep population. The five largest producers are Australia (176 million head), U.S.S.R. (130.7 million), Mainland China (70.6 million), New Zealand (61.3 million), and Argentina (43.9 million), and they account for almost one-half of the total numbers. The United States ranks fourteenth among nations, having 20.4 million sheep on farms. (F.A.O. Production Yearbook, Vol. 24, 1970). Sheep numbers in Canada, as in the United States, declined steadily throughout the 1960's. Canada reported 1.5 million head on farms in 1961; by 1969 flocks had been reduced to 883,000 head. The United States and Canada are the third and fifth largest importers of sheepmeats (Table 2).

*Mr. Dawson has been a research economist in the Vancouver Office of the Branch for several years. His previous projects have been concerned with beef and grapes, but this article is based on his current work on the sheep industry.

Economic considerations have been paramount in the spatial configuration of world sheep production. World trade in raw wool fiber, and an abundance of otherwise idle range lands stimulated the build-up of sheep numbers in the southern hemisphere. In more recent years, these regions have expanded sheep production and diversified exports into mutton and lamb, as well as beef. Australia has continued to stress wool production by maintaining over 90 percent merino and merino crossbred sheep (Commonwealth Bureau of Census and Statistics, Canberra). Markets for substantial amounts of low quality mutton, lamb and beef have been developed with Japan, U.S.A., Greece, and Canada. Australia is the largest exporter of meats to these nations.

New Zealand is the world's largest supplier of sheepmeats. Based on a production system utilizing over 80 percent Romney and Romney crossbred ewes mated to Southdown rams, New Zealand has accomplished uniform quality milk-fed lambs, averaging 30 to 35 pounds carcass weight at four to eight months of age. During the 1968-69 season, approximately 93 percent of the nation's lamb production was exported of which 89 percent went to the United Kingdom (New Zealand Meat and Wool Board's Economic Service). New Zealand spring lamb is gaining considerable consumer confidence in North America.

Depressed world wool markets and the entry of Britain into the European Economic Community (EEC) may have repercussions in major sheep producing countries. Existing E.E.C. tariffs, if applied to British imports of mutton and lamb, could seriously curtail consumption

Table 1: Summary of Canadian Sheepmeat Supplies and Utilization

Year	Est. Farm Output	Number Slaughtered	Domestic	Imports	Total	Jan. 1 Stocks	Exports	Canned	Dec. 31 Stocks	Domestic Disappearance
	('000 head)		('000 pounds)			('000 pounds)			('000 pounds)	
1951-55 Ave.	688.9	685.2	29,824	5,798	35,622	3,537	632	299	3,754	34,474
1956-60 Ave.	740.2	742.6	32,102	17,142	49,244	5,989	550	1,221	6,589	46,873
1961-65 Ave.			30,562	37,306	67,868	8,649	507	1,241	8,412	66,357
1966-70 Ave.			19,289	61,815	81,104	10,766	445	1,183	12,525	77,716
61	760.6	803.3	34,552	33,433	67,985	7,816	173	1,185	9,932	64,511
62	747.6	744.4	31,801	37,587	69,388	9,932	556	1,232	7,054	70,478
63	684.3	721.9	31,548	47,856	79,404	7,054	679	1,108	9,298	75,373
64	668.4	679.8	29,816	37,356	67,172	9,298	757	1,227	9,147	65,339
65	580.6	577.9	25,091	30,299	55,390	9,147	370	1,454	6,631	56,082
66	484.1	492.5	21,730	55,643	77,373	6,631	622	1,372	13,878	68,132
67	472.2	481.8	20,935	48,686	69,621	13,878	184	1,486	8,831	72,998
68	459.8	454.4	19,685	71,455	91,140	8,831	94	1,049	11,411	87,417
69	416.7	413.0	18,081	69,620	87,701	11,411	690	1,038	13,077	84,307
70	346.4	363.8	16,016	63,669	79,685	13,077	635	970	15,430	75,727

Source: Statistics Canada, *Livestock and Animal Products Statistics 1970* (Cat. #23-203).

Table 2: Leading Mutton and Lamb Trading Nations, 1965 and 1969

(1000 metric tons)					
Exporting Country	1965	1969	Importing Country	1965	1969
New Zealand	367.1	473.2	United Kingdom	350.6	367.8
Australia	99.5	106.3	Japan	53.8	129.2
Argentina	27.0	38.2	U.S.A.	19.3	44.6
Ireland	14.2	11.3	Greece	31.7	35.8
E.E.C.*	12.1	14.5	Canada	14.0	34.1
			E.E.C.	25.3	46.2

Source: F.A.O. Trade Year Book (1970).

*E.E.C. includes France, West Germany, Italy, Netherlands, Belgium and Luxembourg.

of New Zealand lamb. Although the New Zealand Meat Board has anticipated such a move for some time, and has placed considerable emphasis on trade diversification, any cut-back in exports to Britain would create a large domestic surplus of lamb. Efforts to develop new markets for this product have been most promising in North America, where a preference for quality young lamb has been clearly demonstrated.

Canadian and American consumer acceptance of imported lamb is encouraging to New Zealand, as it is to Australia. The present world wool situation appears to have long term overtones: in which case, the addition of a high quality meat line designed for the North American market could offer some relief to Australia's sheep industry. Both New Zealand and Australia have the resources and necessary skills to adapt to the needs of the North American market. Exports have been primarily frozen meats with only limited quantities of fresh lamb cuts being sent air freight. Expansion of the fresh trade should be anticipated by North American producers, and efforts made to utilize such trade to their

advantage. Imported fresh product could provide a means of achieving continuity of supply at the retail level and thus enhance the competitive position of domestic supplies.

Canadian Production

The decline in popularity of sheep production in Canada has been in favor of other forms of agricultural endeavor. Although statistics do not indicate a shift of resources to a particular type of production, a general re-allocation of range lands to beef cattle production has taken place. Large range flocks are almost non-existent in Canada. Similarly, many small farm flocks have been displaced by other livestock or crop enterprises. The average size of the sheep enterprise has, however, increased. From 1951 to 1971, sheep numbers on farms fell by nearly one half, while the number per farm more than doubled (Table 3).

Because agricultural producers in Canada tend to allocate their resources (i.e. land, labor, capital and manage-

Table 3: Canadian Sheep numbers on farms 1951-1966

	Number on Farms			Farms Reporting	Ave. No./Farm
	West	East	Total		
1951	599,594	879,143	1,478,737	62,566	24
1956	706,692	931,502	1,638,194	58,362	28
1961	869,984	693,547	1,563,531	38,528	41
1966	545,614	474,383	1,019,997	21,453	48
1971	485,132	375,657	860,789	14,090	61

Source: D.B.S. *Census Canada* (Cat. Nos. 96-601, 99-533 and 96-719).

ment) to maximize the returns to their factors of production, the decline in sheep production may be interpreted in terms of the industry's inability to compete for resources. Production is not a producer objective – it is a means by which an objective is pursued. Re-allocation of resources is thus a change in means to obtain some objective (e.g. farm income) more efficiently.

Growth and development of the Canadian sheep industry are directly related to its ability to provide producers with the best means of attaining a given objective. The long term outlook for beef production would appear to discount any sheep industry expansion based on land extensive methods. Increasing output per sheep unit per acre to overcome the beef industry's comparative advantage in range, or pasture utilization is not promising. Methods of production that rely more heavily on capital and labor intensive techniques may have merit, providing their rate of return to investment and labor is comparable to other intensified livestock enterprises (e.g. beef feedlot, dairy, or confinement hog production). Moreover, the success of these techniques is conditioned by the degree to which output complements consumer demand. Efficiencies gained in sheep production could very well be lost through failure to meet consumer quality specifications.

Canadian Consumption

Meat consumption rates in the more highly developed nations have generally increased with rising consumer incomes. During 1969, Canada ranked sixth among nations in per capita consumption of red meats (Table 4). Of the nations reported, only the United Kingdom and West Germany demonstrate a preference for pork, all other nations consume greater quantities of beef. In general, people in the northern hemisphere eat considerably more beef and pork than mutton and lamb, while in the southern hemisphere, with the exception of

Table 4: Meat Consumption, Selected Nations, 1969

	(Pounds per capita)			
	Beef & Veal	Pork	Mutton & Lamb	Total
New Zealand	106	29	87	222
Argentina	182	17	12	211
Australia	93	29	89	211
United States	114	65	3	182
Uruguay	98	19	60	177
Canada	93	52	4	149
United Kingdom	54	60	23	137
West Germany	52	81	—	133
France	66	59	6	131

Source: Meat Packers Council of Canada (1971-72 edition of "Meat").

Argentina, they consume greater quantities of mutton and lamb than pork.

Canadian per capita meat and poultry consumption rose steadily throughout the 1960's, reaching an all time high of 201.9 pounds in 1970 (Table 5). Beef and poultry meats accounted for over 90 percent of the increased demand. Mutton and lamb were unable to exhibit a sustained growth rate and consumption remained stable at 2.9 to 4.2 pounds per capita.

Mutton and lamb have never gained the support of North American consumers. Few people, with the exception of certain ethnic and high income groups, contribute to the domestic disappearance of sheepmeats. Several reasons could be cited as contributing to the lack of consumer enthusiasm. A common belief, that experiences overseas during the second world war have left the sheep industry with a poor image, is simply a scapegoat. Although overseas exports declined sharply, domestic consumption rates varied little in both the United States and Canada following the war. In 1938 Canadians ate an average of five pounds of mutton and lamb per person; their American counterparts consumed seven pounds. Moreover, the proportion of North American society that was involved in the war overseas was very small. It is highly unlikely that these individuals could determine consumer meat preferences for some 25 years.

The real problems faced by Canadian sheepmeats in the market place are largely the result of insufficient supplies and a failure to respond to consumer needs. Consumers should expect, among other things, quantity, uniform quality, dependability, and prices that reflect the total value added in the form of production and marketing services. Other meats, and especially poultry products, have demonstrated a high degree of success in satisfying consumer needs, as indicated by their growth in consumption rates.

Table 5: Canadian Meat and Poultry Consumption, 1960-1970

Year	(Pounds per capita)										
	'60	'61	'62	'63	'64	'65	'66	'67	'68	'69	'70
Beef	70.0	70.5	71.1	74.3	79.4	83.6	84.1	84.0	87.1	88.2	85.7
Pork	52.6	50.3	50.1	50.7	51.8	47.9	46.9	53.8	53.6	51.9	55.3
Veal	6.9	6.8	7.1	6.5	7.2	8.3	7.0	7.2	6.4	5.1	4.5
Mutton & Lamb	2.9	3.5	3.8	4.0	3.4	2.8	3.4	3.6	4.2	4.0	3.5
Variety Meats	4.8	4.5	4.3	4.0	3.9	3.6	3.6	3.9	3.8	4.0	3.4
Canned Meats	6.4	4.3	4.2	4.4	4.5	4.2	4.2	4.7	4.7	4.6	4.7
Poultry (eviscerated basis)	27.8	31.1	31.0	32.5	34.5	36.0	39.4	40.7	39.7	42.8	44.8
TOTAL	171.4	171.0	171.6	176.4	184.7	186.4	188.6	197.9	199.5	200.6	201.9

Source: Statistics Canada, *Livestock and Animal Products Statistics 1970*, (Cat. #23-203).

Supply

Consumers have no assurance that domestic sheepmeats will be available in retail outlets at any given time. Supplies are distributed throughout the year with average monthly volume being about two times greater during the September to December period than from January to August (Table 6). As a result, fresh Canadian mutton and lamb is available in very limited amounts during the entire year. Imported frozen product is available at all times according to the needs of the market. Fresh lamb of the quality required by consumers could be supplied by New Zealand during the period from October to June (Table 6).

Quality

Product quality, as determined by existing grading standards and production practices, is highly variable in

Canadian lamb. Two general classifications, mutton and lamb, based on age as determined by the degree of breakjoint ossification (i.e. structure of the knuckle at the extreme end of the foreleg), do not necessarily establish quality from a consumer point of view. Ossification of the breakjoint occurs anywhere from 12 to 20 months of age depending on breed, sex, nutrition and management of the animal. Prior to this stage of development, the animal qualifies as lamb and enters the fresh meat market. Four grades of lamb are designated according to exterior carcass fat thickness (the greater the fat covering, the higher the grade) but fat covering does not necessarily infer consumer quality. Mature animals are classified as mutton and are used primarily for manufacturing purposes.

Production practices that rely upon numerous breeds and management systems contribute significantly to quality variation in sheepmeats. Different "types" of

Table 6: Distribution of Sheep and Lamb Slaughtering, Canada, Australia and New Zealand, 1971

Month		Canada*		New Zealand**		Australia***	
		Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
		(number head)		('000 head)		('000 head)	
January	(4 wks)	2,253	12,879	1,512	3,720	2,024	1,631
February	(4 wks)	3,174	10,840	1,727	3,343	2,011	1,522
March	(5 wks)	N/A	N/A	1,657	3,876	2,481	1,754
April	(4 wks)	3,564	10,218	877	3,334	2,178	1,598
May	(4 wks)	2,614	7,616	681	2,382	2,372	1,593
June	(5 wks)	2,359	12,368	467	1,373	2,511	1,769
July	(4 wks)	1,902	12,067	335	498	2,561	1,667
August	(4 wks)	1,854	15,264	218	233	2,294	1,754
September	(5 wks)	2,269	22,249	328	102	2,452	2,058
October	(4 wks)	1,103	22,575	401	166	2,463	2,042
November	(4 wks)	1,088	21,315	481	3,110	2,627	1,913
December	(4 wks)	879	19,336	492	4,890	1,901	1,926

* Statistics for 4 and 5 week periods. (C.D.A., Health of Animals - inspected slaughter).

** Statistics for the year ending July 31, 1971. (New Zealand Meat Board).

*** Statistics for the year ending November 30, 1971. (Commonwealth Bureau of Census and Statistics).

sheep do not yield similar carcasses. Although it is generally agreed that such variety is required by the market, no attempt has been made to quantify these demands and differentiate lamb carcasses accordingly. In comparison, New Zealand spring lamb carcasses exhibit a high degree of uniformity and could be superior in consumer appeal to most domestic supplies. This product, if supplied fresh, would approach the standard of excellence established by young (5 to 6 months), milk-fed Canadian spring lamb from the larger breeds of sheep.

Price and Value Added

Given adequate choices, consumer purchases can be regarded as a measure of the value added in the form of production and marketing services. Should the cost of these services exceed their value, consumers will reject the product in favor of other purchases. Consumers have, to some extent, rejected Canadian lamb in favor of imported lamb products. This is evident by the persistence of extreme price variations, as measured by live animal quotations, over the past decade when supplies of domestic product fell by about 50 percent. Decreasing supply under situations of increasing demand should tend to reduce price variations in the market.

Inefficiencies in the market channels contribute significantly to the cost of Canadian lamb products. Capacity levels of throughput minimize fixed costs per unit of output and encourage labor specialization. Increased processing and retailing costs resulting from limited product flows result in higher unit costs at the retail level which are not offset by corresponding value increments. Moreover, the general lack of product development, advertising, and promotion of Canadian lamb are a form of indirect cost to the industry which are directly related to insufficient product volume.

SUMMARY

The major problem in the Canadian sheep industry would appear to be adjusting production to market demand at prices equitable to producers and consumers, and at the same time accommodating agencies within the market channel. Identification of a production-marketing program and corresponding marketing strategies are crucial factors in overcoming this problem. Prices are constrained by competition from beef, pork, poultry, and imported sheepmeats. Resource use may be con-

strained by higher returns from cattle, hog and poultry enterprises. Producer gains must, therefore, be realized through increased operational efficiency within the channel. Inefficiencies exist primarily as a result of insufficient volume, but also as a result of extreme quality variations, generally low levels of animal productivity, and uncoordinated marketings of slaughter sheep and lambs. The industry's production should be orientated toward market requirements, and the marketing program should be formulated in terms of operational efficiency in the market channel.

The basic function of a marketing program is to establish how resources should be utilized in achieving a given set of goals. In this context the sheep industry has essentially two alternatives: (1) concentration of output over a limited marketing period (e.g. June to October), or (2) continuity of supply throughout the year. The production and marketing requirements, as well as marketing strategies would be quite different. If year round market continuity is the industry's choice a new and untried process must be utilized. Such a system would necessitate continuous, or possibly spring-fall lambing seasons, which, although possible with certain breeds of sheep, would place considerable demands on resources (capital and management). It is doubtful that the industry is capable of attaining the kind of output levels desired on a continuous economic basis. In the meantime, consumer objections and channel problems would remain unsolved. Moreover, attempts to supply fresh Canadian lamb throughout the year could prove devastating should Australia and New Zealand enter the fresh lamb trade during their normal spring lamb slaughtering months of November to June.

CONCLUSION

The outlook for Canada's sheep industry is clouded by impending production and marketing decisions within the industry. Failure of these decisions to find favor with consumers, as well as with other market channel members can only prolong the industry's stagnation. In retrospect, it seems clear that many people, both inside and outside the industry, have expected too much from domestic fresh lamb. Consumers do not necessarily prefer fresh Canadian lamb *per se*, although certain market segments could have substantial potential for specific types of fresh lamb. Delineation of a demand profile indicating the needs of various market segments is thus a vital tool for industry planning.

COSTS AND RETURNS ON FRUIT FARMS

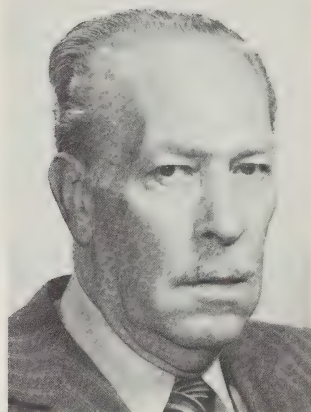
After being winter killed in 1968-69, soft fruit trees are being replanted to meet the roadside tourist trade.

Thirty-nine percent of receipts for apples in 1969 were required to pay the interest on capital compared to 13 percent in 1962.

This article compares the financial results attained by fruit growers in the Okanagan Valley in 1962 and in 1969. The 1969 study¹ is part of a two year study requested by the Summerland Research Station, Canada Department of Agriculture and is concerned with the "Economics of High Density Apple Plantings". In conjunction with the request, data were gathered to update information on variety and planting trends, current farm capital situation, costs of production and so forth. The 1962 study was the result of a request by A.R.D.A. to the Economics Branch, Canada Department of Agriculture, for information on fruit farming in the region.

Fifty seven fruit growers participated in the 1969 study and in 1962, 80 growers took part. In both years approximately one half of the growers were located in the northern section of the Okanagan Valley and the balance in the south. Although the farms studied each year were not necessarily the same, the region surveyed, the type of farming and the schedule used for enumerating data were the same. Consequently, it is believed that the 1969 and 1962 farms are sufficiently similar to warrant a comparison of their operations to ascertain the factors associated with the degree of success attained in the respective years. Further, the farmers and farms included in the study are considered to be representative of the more than 3,000 fruit growers in the district.

The fruit growing region extends along the valley floor and bench lands from the International Boundary at Osoyoos, to Vernon, near the northern tip of Lake



*B.K. Acton**

Okanagan, a distance of some 120 miles. Warm summers and moderate winters are characteristic of this arid area. Successful growers depend on irrigation systems for watering their orchards. The southern half of the valley has a slightly warmer climate and longer growing season, thus favoring the growing of more tender varieties of fruit, particularly peaches and apricots.

In 1969 the gross and net returns to growers were generally unsatisfactory. A combination of several factors contributed to this situation.

(a) Killing winter frosts occur some years. The extent of tree damage is related to the degrees of freezing temperatures associated with the "hardening off" process in the tree as winter approaches. Crop losses in the spring are caused by the susceptibility of buds and flowers to temperatures slightly below freezing.

The winter of 1968-69 was unusually severe. A cold spell occurred in December 1968 and January 1969 (Table 1), damaging or killing many trees. The soft fruit crop was virtually a total failure. Apple yields were drastically reduced and total Okanagan Valley production was 10 to 15 percent below normal.

(b) There was excessive spoilage (9.7 percent of net crop) of Spartan apples in storage. The disease, known as "Spartan breakdown", was caused by a calcium deficiency during the growing season. Research at the Summerland Station is overcoming this problem.

(c) World production of apples and keen competition for available market outlets resulted in very low prices.

¹Agencies doing the study are the Economics Branch, C.D.A., and the Department of Agriculture Economics, Faculty of Agriculture, University of British Columbia.

*Mr. Acton has been with the Branch for many years and has conducted studies on a wide variety of economic problems throughout western Canada.

TABLE 1. — LOWEST RECORDED WINTER TEMPERATURES FOR SELECTED YEARS AT SELECTED OKANAGAN VALLEY POINTS

	Altitude Feet	1961-62			1968-69			1969-70		
		Dec.	Jan.	Feb.	Dec.	Jan.	Feb.	Dec.	Jan.	Feb.
Vernon (S.W.)	1,200	6°F.	-14°F.	3°F.	-33°F.	-25°F.	-5°F.	21°F.	-4°F.	19°F.
Kelowna (C.D.A.)	1,590	7°F.	-17°F.	4°F.	-26°F.	-23°F.	-3°F.	18°F.	-7°F.	15°F.
Summerland (C.D.A.)	1,491	12°F.	-4°F.	8°F.	-21°F.	-12°F.	-1°F.	19°F.	6°F.	22°F.
Penticton	1,121	2°F.	-1°F.	6°F.	-17°F.	-9°F.	-1°F.	17°F.	6°F.	22°F.
Osoyoos	1,025	12°F.	2°F.	11°F.	-14°F.	-9°F.	-5°F.	22°F.	10°F.	21°F.

Climate of British Columbia, Province of British Columbia, Department of Agriculture, Reports for 1961, 1962, 1968, 1969, and 1970.

In contrast to 1969, "1962 was reasonably normal as far as production was concerned". (B.C. Tree Fruits Ltd.)

Financial Summary

Operator's labor income or the return to the orchardist for his labor and management (Table 2) changed from \$152 per bearing acre in 1962 to a negative \$344 in 1969. What does the financial summary reveal about the reasons for the decline in earnings?

(a) Fruit sales were \$725 per bearing acre in 1962, but slipped to \$645 in 1969. Because of the winter freeze, fruit crops other than apples returned only 11.3 percent of total expenses (\$73 per bearing acre) compared with 26 percent (\$184 per bearing acre) in 1962. In other words, in 1969 a large proportion of the gross apple receipts had to be allocated for payment of production costs.

(b) In the period between studies, current expenses accelerated by 53 percent, from \$371 to \$566 per bearing acre. All items enumerated under expenses showed increases, with the exception of custom work. Operators in 1962 hired more custom work, but also received more for doing custom work. Hired labor typically reflects the increasing cost trend. Although growers hired fewer days of labor per bearing acre, including pickers, (Table 5), overall cash wages were 50 percent greater because the rate of pay had increased from an average of \$1.20 to \$1.85 per hour.

(c) Interest increased from \$135 to \$380 per bearing acre as a result of an increase in the value of land and equipment used in production and a modest increase in the interest rate.

It is apparent from the foregoing that higher yields, better fruit prices or a combination of both are necessary to compensate for the upward trend evident in current expenses and capital values.

Crop Insurance

Crop insurance was not a factor in 1962, either as an expense or as partial compensation for crop loss. Crop insurance as a protection of annual income against unusual crop losses became operative in British Columbia in 1967 at the option of the producer.

As a group, the 57 farms studied in 1969 paid an average premium for crop insurance of \$28 and received an average of \$46 for a net benefit of \$18 per bearing acre.

However, of the 57 farms studied only 30 operators carried crop insurance. They paid an average premium of \$40 and received an average of \$67 for a net benefit of \$27 per bearing acre. But of these 30 growers who were insured against crop losses only 16 sustained enough loss to receive compensation. These 16 growers received an average of \$163 per bearing acre in insurance benefits. As the average premium paid was \$48, the net benefit equalled \$115 per bearing acre.

Capital Investment

Investment increased from \$2,696 per bearing acre in 1962 to \$6,331 in 1969 (Table 3). Growers reported that land values had increased from \$1,196 to \$3,414 per acre in the same period.

What has precipitated this rapid acceleration in land values in an interval of only seven years? Contributing factors are listed as follows:

(a) Expansion of the industrial base under incentive programs has resulted in new sub-divisions for industrial and residential use.

(b) An increasing number of people continue to move into the region to retire, because of the valley's desirable climate.

(c) A rapidly growing tourist industry, particularly from the prairies, since the "Rogers Pass Section" of

TABLE 2 — AVERAGE FINANCIAL SUMMARY OF OKANAGAN FRUIT FARM OPERATION, 1969 AND 1962

	Per Operation		Per Bearing Acre	
	1969	1962	1969	1962
Number of fruit farms studied	57	80		
Average size ¹ — Orchard acres	23.1	22.8		
— Bearing acres	16.1	14.2		
Current receipts	\$	\$	\$	\$
— Apples			573	537
— Pears			21	56
— Peaches				29
— Apricots				20
— Cherries			42	50
— Plums, prunes, other			10	33
Total fruit	10,401	10,307	646	725
Crop insurance	738	—	46	—
Custom work	52	304	3	21
Total current receipts	11,191	10,611	695	746
Capital receipts	271	208	17	15
Net inventory increase	1,332	1,090	83	77
Total farm receipts	12,794	11,909	795	838
Current expenses				
— Land, Bldg., taxes, ins., repairs			30	20
— Irrigation			32	22
— Fertilizers			17	14
— Sprays			71	57
— Cull charges			25	18
— Other crop expenses			30	18
— Equipment operation			78	51
— Custom work			2	16
— Hired labor			207	138
— Miscellaneous			46	17
— Crop insurance premium		—	28	—
Total current expenses	9,096	5,273	566	371
Capital expenses	2,760	2,031	171	143
Total farm expenses	11,856	7,304	737	514
Family farm income	938	4,605	58	324
Less — Interest on capital	6,144	1,916	380	135
— Value unpaid labor	350	535	22	37
Operator's labor income	-5,526	2,154	-344	152

¹ Range in size — orchard acres 1.9 to 108.4, 7.2 to 54.0
— bearing acres 1.9 to 82.2, 3.8 to 31.0

the Trans Canada Highway was opened in 1962. Expansion of services and recreational facilities has been required to cope not only with the needs of summer and fall holidayers, but also with increasing numbers of winter sports enthusiasts.

Prices paid for agricultural land for alternative uses, have been reflected in accelerated values for farm property. It is anticipated that there will be a continuing pressure on present agricultural land for transfer to other uses.

As an overall statement on size of fruit growing farms, local comments indicate that some of the very small orchards convenient to urban centers are being bought for sub-dividing. Although a continuation of this practice will probably reduce the total acreage in fruit, it will also tend to increase the average size of fruit farms in the region.

Liabilities

Loans on the farms studied in 1969 were nearly double

TABLE 3 — AVERAGE INVESTMENT OF OKANAGAN FRUIT FARM OPERATIONS, 1969 AND 1962

	Per Operation		Per Bearing Acre	
	1969	1962	1969	1962
Number of fruit farms studied	57	80		
Average size ¹ — Orchard acres	23.1	22.8		
— Bearing acres	16.1	14.2		
Average investment	\$	\$	\$	\$
Land — Orchard	78,872	27,276	4,900	1,919
— Other improved	5,787	1,989	360	140
— Unimproved	988	643	61	45
— Buildings (house excluded)	2,931	2,134	182	150
Total real estate	88,578	32,042	5,503	2,254
Equipment — Power			469	222
— Irrigation			205	119
— General			148	99
Total equipment	13,234	6,251	822	440
Other	97	32	6	2
Total average capital	101,909	38,325	6,331	2,696
Interest on investment				
1969 @ 6 per cent	6,114		380	
1962 @ 5 per cent		1,916		135
Average value of orchard land per acre	3,414	1,196		

¹ Range in size — orchard acres 1.9 to 108.4, 7.2 to 54.0
— bearing acres 1.9 to 82.2, 3.8 to 31.0

the amount of those existing in 1962 (Table 4). They were approximately \$1,000 per bearing acre in 1969 compared with \$500 in 1962.

Proportionately more growers had Farm Credit Corporation loans in 1969 than in the earlier period, while as might be expected, fewer Veterans' Land Act loans were outstanding.

Labor

Estimates by operators of labor requirements were 30.9 days per bearing acre in 1969 and 38.2 days in 1962 (Table 5). There are many factors that may account for the fewer days of labor use in 1969 as:

- (a) Reduced yields in 1969, particularly of soft fruit, decreased total time of picking.
- (b) More mechanization in 1969 replaced some labor.
- (c) Increases in high density apple plantings (smaller trees), increased efficiency of labor, by reducing pruning and picking time.

Bearing Acres and Distribution of Fruit Trees

The size of the fruit producing area per farm increased from 14.2 bearing acres in 1962 to 16.1 bearing acres in 1969 (Table 6). In the same years, the apple acreage changed from 10.2 to 12.3 bearing acres, while the plantings of other fruit remained relatively the same. Bearing apple trees utilized 72 percent of the total fruit bearing acreage in 1962 compared with 76 percent in 1969.

Yield of Fruit per Bearing Acre

Apple yields on the farms studied in 1969 and 1962 averaged 11.15 tons and 10.20 tons per bearing acre respectively (Table 7). It should not be inferred from this that apple growers did not sustain losses from the 1968-69 winter freeze. Some producers had many trees killed or permanently weakened. Total apple production in the region, as reported by B.C. Tree Fruits Ltd., was below that of the 1962 year.

1962 - Total apple crop 142,820 tons - processed 23 percent

TABLE 4 — AVERAGE LIABILITIES PER BEARING ACRE ON OKANAGAN FRUIT FARMS, 1969 AND 1962

	1969	1962
Number of farms	53	80
Bearing acres	14.9	14.2
	\$	\$
Per bearing acre		
— Beginning year debt	1,017	481
— End year debt	971	530
Net increase in debt		49
Net decrease in debt	46	
Interest paid	56	24
Proportion having outstanding loans	%	%
— Farm Credit Corporation	43	20
— Veterans Land Act	13	16
— Farm improvement (bank)	25	24

1969 - Total apple crop 123,917 tons - processed 31 percent

Yields of other fruits were badly affected by the severe 1968-69 winter temperatures (Table 1). Peaches and apricots were a total loss. Pear, cherry, plum and prune yields were greatly reduced, particularly in the northern half of the region. Many soft fruit trees were killed or permanently damaged, necessitating removal.

Distribution of Apple Varieties

In both 1969 and 1962, 71 percent of the apple trees on the farms studied were Delicious and McIntosh (Table 8). By 1969 a change had occurred in planting trends, particularly as it affected five varieties.

TABLE 5 — AVERAGE UTILIZATION OF LABOR PER BEARING ACRE ON OKANAGAN FRUIT FARMS, 1969 AND 1962

	1969	1962
Number of farms	57	80
Bearing acres	16.1	14.2
	8-hr. days ¹	8-hr. days ¹
Hired labor	9.0	7.4
Pickers ²	4.3	6.8
Family labor	1.8	3.5
Operator	15.8	20.5
Total 8-hr. days per bearing acre	30.9	38.2

¹ 8-hour days used as being more typical in orchard industry.

² Pickers — time estimated from average piece work earnings.

(a) The Delicious variety gained in importance by approximately 10 percent due in part to a rapid expansion in Golden Delicious plantings, while McIntosh numbers declined by about the same amount. Golden Delicious, being a relatively new variety, has appealed to the public, resulting in a growing demand, at least for the present.

(b) Spartan tree numbers increased by about six percent, and Winesaps dropped by three percent, to a level forming only 3.3 percent of the total apple tree population.

Average Yield and Prices Received for Five Apple Varieties

Average yields per bearing acre in 1969 ranged from 9.2 tons for Spartans to 11.6 tons for McIntosh (Table 9). In 1962 McIntosh and Winesap yields averaged over 13 tons per bearing acre on the farms studied, while Red Delicious averaged only 6.5 tons. Golden Delicious and

TABLE 6 — BEARING ACRES AND DISTRIBUTION OF FRUIT TREES ON OKANAGAN FRUIT FARMS, 1969 AND 1962

	1969		1962	
Number of farms	57		80	
	Acres	%	Acres	%
Apples	12.3	76.4	10.2	71.9
Pears	1.9	11.8	1.6	11.3
Peaches	0.8	5.0	0.7	4.9
Apricots	0.2	1.2	0.5	3.5
Cherries	0.7	4.4	0.7	4.9
Plums, prunes, other	0.2	1.2	0.5	3.5
Total bearing acres	16.1		14.2	

Spartan yielded an average of a little over three tons per acre each. This was probably due to the fact that the trees of these two varieties were young and had not come into full production. Table 8 indicates a rapid expansion in the planting of Golden Delicious and Spartan apple trees between 1962 and 1969.

In 1962, prices paid to growers favored the low yielding varieties of that year. McIntosh and Winesap were slightly over \$1.00 per box, while the other three varieties ranged from \$1.74 per box for Spartans to \$2.34 per box for Golden Delicious. In 1969 Spartan apples suffered considerable spoilage loss as a result of "Spartan breakdown". This consequently reduced the pooled producers' prices to just under \$1.00 per box. Winesaps, on the other hand, were losing in consumer popularity and were becoming an obsolete variety.(1) The pooled price averaged 57 cents per box.

TABLE 7 — AVERAGE YIELD OF FRUIT PER BEARING ACRE ON OKANAGAN FRUIT FARMS, 1969 AND 1962

	1969	1962
Number of farms	57	80
	tons	tons
Apples	11.15	10.20
Pears	1.42	5.49
Peaches	—	8.41
Apricots	—	6.98
Cherries	2.57	3.60
Plums and prunes	5.42	7.45

Apple Receipts and Interest on Capital

Growers received an average of \$1.34 per 40-lb. box (3.36¢ per lb.) in 1969 compared with \$1.46 (3.66¢ per lb.) in 1962 for all varieties and grades marketed. In the study years, the calculated interest on farm capital used in the production of apples amounted to 52¢ and 19¢ per box. In other words, 39 percent of the apple receipts were required to pay the interest on capital in 1969 compared with 13 percent in 1962.

There was a negative operator's labor income in 1969 of \$344 per bearing acre (Table 2). Assuming the same level of production, it would require an average increase in apple prices of 62¢ per box (1.54¢ per lb.) for the operations studied in 1969 to "break even" without allowing anything to the grower for his labor and management.

TABLE 8 — DISTRIBUTION OF APPLE TREE VARIETIES ON OKANAGAN FRUIT FARMS, 1969 AND 1962

	1969	1962
Number of farms	57	80
	%	%
Delicious — Red	32.2	30.7
— Golden	15.3	2.6
— Common	0.3	4.2
Total Delicious	47.8	37.5
McIntosh	22.7	33.3
Spartan	20.7	14.5
Winesap	3.3	6.0
Newton	1.9	3.8
Rome	0.9	1.1
Others	2.7	3.8
Total	100.0	100.0

Whither the B.C. Fruit Industry

Tree fruit production, which is mainly centered in the Okanagan region, is an important segment of the British Columbia agricultural industry. Although land may be lost from agriculture to alternative uses, it is anticipated that fruit growing will continue to be important. Total production will likely be maintained by better per acre yields, high density plantings and improved techniques.

From 1961 to 1970, the provincial cash value of farm receipts averaged \$173,000,000 with tree fruit contributing approximately 11 percent to the total.(2) The farm value of apples was about 69 percent of the total tree fruit output in the 10 year period. Of course, total production and price received per unit influenced the importance of tree fruit or apples to the total value of farm production in specific years.

Apple production following the 1968-69 freeze resulted in smaller than normal crops in the succeeding two years. Production in 1971 was less than that of the previous year. Recovery of some trees from the freeze was prolonged and many trees had to be removed, particularly older ones that had been exposed to several bad frosts over the preceding years. In addition, the 1971 set (pollination of the flower) was not good. It is anticipated that the 1972 production will have returned to a more normal level of 6.5 to 7 million boxes, as many of the more recently planted trees will be commencing to bear. New plantings have been predominantly of semi-standard tree types. The total planted acreage of main varieties of apples in 1970, by tree size was:(3)

TABLE 9 — AVERAGE YIELD PER BEARING ACRE AND PRICE RECEIVED FOR 5 IMPORTANT APPLE VARIETIES, OKANAGAN FRUIT FARMS, 1969 AND 1962

	Average yield per bearing acre		Average price received per 40-lb. box	
	1969	1962	1969	1962
Number of farms	57	80		
	tons		dollars	
Red Delicious	11.2	6.5	1.39	1.98
Golden Delicious	11.4	3.3	1.48	2.34
McIntosh	11.6	13.2	1.70	1.18
Spartan	9.2	3.2	0.90	1.74
Winesap	11.0	13.4	0.57	1.06

Standard trees	63 percent
Semi-standard trees	26 percent
Semi-dwarf trees	9 percent
Dwarf trees	2 percent

Although apple growers continue to suffer from a cost-price squeeze, some improvement in per pound receipts to producers has occurred since 1969. On the average, the fresh domestic market utilizes 55 to 60 percent of production, processing about 30 percent, and the export market the balance. The most important export buyer has been the United States followed by Hong Kong and South East Asia. The European and United Kingdom sales have been reduced to virtually a negligible quantity due to various factors. It should be noted that, even with increasing competition from foreign growers, the British Columbia apple crop has always been disposed of, and those in the industry are not unusually pessimistic about future sales opportunities.

Peach trees, which were declining in numbers over the past several years, are again being planted. Roadside stands sell a large proportion of the crop, although the actual quantity is not known. About 25 percent of the peaches handled in 1971 by B.C. Tree Fruits Ltd., (normally 35 to 40 percent) was allocated to processors. In the southern part of the Okanagan, there are some new apricot tree plantings. In 1971, about 2,840 tons of the apricot crop was marketed through B.C. Tree Fruits Ltd., of which about 44 percent (a normal tonnage) was reserved for cannery use. A large 1972 cherry crop is anticipated. As a rule 15 to 20 percent (1971 - 12 percent) of the cherries produced go to the canneries. The best of the Fancy pears are sold on the fresh market, and 35 to 40 percent of the total crop is usually processed.

Summary and Observations

1. Okanagan fruit farms studied in 1969 had an average operator's labor income of \$-344 per bearing acre compared with \$152 in 1962. Factors associated with this marked reduction in earnings were:

(a) reduced soft fruit income in 1969, because trees were killed or damaged by a December and January freeze.

(b) low world prices for apples associated with below average quality for some apple varieties, particularly Spartan, which suffered spoilage losses in storage due to "Spartan breakdown".

(c) increased operating expenses in 1969, up 53 percent from those reported in the earlier study. Hired labor typically reflected the increasing cost trend. Total days of paid labor was less in 1969 than in 1962, but total cost of paid labor was more because rate of wages had increased from an average of \$1.20 to \$1.85 per hour.

(d) increased interest charges from \$135 to \$380 per bearing acre, for farm capital as a result of investment changing from \$2,696 to \$6,311 per bearing acre. Competition for land for alternative uses, as industry, urban sub-division and recreational facilities associated with a growing residential and tourist population, has precipitated rapid increases in land values.

2. On the farms studied in 1962 and 1969, bearing acres were 14.2 and 16.1 respectively. Apples utilized the additional land, increasing from 72 percent to 76 percent of the total bearing fruit acreage.

3. Although overall apple production in 1969 in the Okanagan was less because of frost damage, the farms studied in that year had an average apple yield of 11.15 tons per bearing acre, or about 1 ton more than in the earlier study. The 1968-69 winter freeze greatly reduced soft fruit yields, with peaches and apricots being a total failure.

4. Delicious and McIntosh apples in both study periods comprised 71 percent of the total tree numbers. From the information gathered it appeared that by 1969, Delicious, particularly Golden Delicious, and Spartan plantings were on the increase, while McIntosh was declining somewhat in importance. Winesap was disappearing due to obsolescence.

5. In 1969, five apple varieties, namely Red Delicious, Golden Delicious, McIntosh, Spartan and Winesap, had yields on the farms studied ranging from 9.2 tons to 11.6 tons per bearing acre. There was greater variability in the 1962 yield pattern, probably due to substantial recent plantings of Golden Delicious and Spartan not having reached maturity.

In both study periods, there was pricing variability among varieties because of quantity of production, quality of fruit and consumer preferences.

6. Growers on the farms studied received an average of \$1.34 per 40 lb. box for apples in 1969 and \$1.46 in 1962 per box. Interest on capital used in apple production amounted to 52¢ and 19¢ per box in the respective years.

7. Tree fruit production is an important segment of the British Columbia agricultural industry. Average value of tree fruit for the period 1961-70 inclusive was 11 percent of total average cash farm receipts of \$173,000,000 for the same period. The value of apples was 69 percent of total tree fruit production.

8. Smaller than normal apple crops followed the 1968-69 freeze for two years. It is anticipated that production in 1972 will approach 6.5 to 7 million boxes due in part to recently planted trees, primarily semi-standard types.

9. Peach and apricot trees which were declining in numbers prior to the freeze and were badly damaged in the 1968-69 winter, are again being planted by growers.

The tourist roadside stand business has been an inducement to orchardists to maintain production of soft fruit.

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- (2). Agricultural Statistics Report, B.C. Department of Agriculture, Markets and Statistics Branch, 1962 to 1970 inclusive.
- (3). Memorandum - 1970 Crop Potential. B.C. Tree Fruits Ltd.

POLICY AND PROGRAM DEVELOPMENTS IN CANADA

AGRICULTURAL PRODUCTS MARKETING ACT

(Manitoba Milk Order)

The Milk Control Board of Manitoba is now authorized to regulate the marketing of milk produced in Manitoba in interprovincial and export trade. The Board has been granted the power to set levies or charges and to collect them from persons who are engaged in the marketing of milk.

(Saskatchewan Milk Order)

The Milk Control Board of Saskatchewan has been granted authority to regulate milk marketing in Saskatchewan, for both interprovincial and export trade. The power to fix and collect levies from persons engaged in the marketing of milk is also granted. As is the case in Manitoba, the levies may be used for creating reserves, paying expenses or making equalization payments to producers.

(P.E.I. Vegetable Order)

The P.E.I. Vegetable Commodity Marketing Board is authorized to regulate the marketing of P.E.I. turnips in both interprovincial and export trade.

AGRICULTURAL PRODUCTS CO-OPERATIVE MARKETING ACT

(Ontario Bean Producers' Marketing Board)

Under the terms of the Act, the OBPMB has agreed to market No. 1 Eastern Pea Beans and Yellow-Eye Beans. Initial payments will be \$5.76 per hundredweight. These are the same initial payments as in the past three years.

Alberta Feed Grain Marketing Information Exchange

On August 1, the Alberta Grain Commission began operating a marketing information exchange for feed grain buyers and sellers. Headquarters are in Calgary with stations in Fairview, Edmonton, Vermilion, Red Deer, Calgary and Lethbridge.

Prospective buyers and sellers telephone the closest station and give descriptions and prices of the required

If subsequent payments bring total payments to over \$9.10 for pea beans and \$12.35 for yellow-eyes, the processors will receive seven percent of the excess and producers the remainder.

CROP INSURANCE ACT

(Crop Insurance Amendment)

Negotiations have been completed between the federal government and Ontario adding crop insurance plans for beets and onions to the cost-sharing agreement. For purposes of this agreement "beets" means all beets other than sugar beets.

COLD STORAGE ACT

(Fruit Storage Assistance)

The federal government has agreed to amend the Act to provide grants of up to \$500,000 for new storage facilities for tender fruits in southwestern Ontario. Each grant will be contingent upon those building the storage contributing two thirds of the capital required.

NATIONAL FARM PRODUCTS MARKETING COUNCIL

Hearings were held across Canada in September "to inquire into the merits of establishing a national agency to regulate the marketing of eggs" and to "review the marketing plan proposed by the Canadian Egg Producers' Council."

It was the first set of hearings on the establishment of a national marketing agency for any farm product since Bill C-176 was passed by Parliament late last year.

or offered grain. Once initial contacts are arranged and made, it is up to the participants to make their own pricing and delivery agreements.

John Channon, chairman of the Commission, says that the exchange is designed to channel non-quota feed grain into the province's growing livestock industry and to reduce marketing costs for grain producers. Initial response has been encouraging and Mr. Channon expects the information exchange to be a permanent feature in Alberta grain marketing.

DEVELOPMENTS ABROAD

Highlights from "Spot News from Abroad", the newsletter issued by the International Liaison Service of Canada Agriculture, in co-operation with the trade Commissioner Service of the Department of Industry, Trade and Commerce.

Grains

1972 U.S. Corn and Wheat Forecast

The first official USDA estimate of the 1972 corn crop forecasts production at 4.9 billion bushels - down 11 percent from the record 5.5 billion bushel crop of 1971. The main reason is a 10 percent cut in grain corn acreage. The crop will be short of the likely domestic and export demand of about 5.1 billion bushels.

The total 1972 U.S. wheat crop is well short of prospective demand. Production is forecast at 1.5 billion bushels, down six percent from last year's record 1.6 billion bushels.

Livestock

Beef

U.S. beef and veal production is expected to be above 1971 levels this year. Cattle slaughter in the first half of 1972 was up about one percent and is expected to increase moderately in the third and fourth quarters.

Argentine cattle slaughter will be up at least 10 percent. Pasture was good in early 1972 and cattle will be marketed at heavier weights.

EEC slaughter has recently been below year-earlier levels resulting in short supplies and sharp rises in producer prices.

Hogs

Production is down in Western Europe, the United States and Canada but large increases in Eastern Europe might push world pork production over the 1971 total.

Sheep

Australian sheep slaughter may increase 25 percent. Total Oceanic sheepmeat production is expected to increase slightly.

World Beef Herd Expansion

Herds in the U.S.A., Canada, Argentina and Australia increased by an average of 4.9 percent during 1971 -

over twice as fast as the previous year. Herds will probably increase faster next year. Australia, the world's largest beef exporter in 1971, has expanded her herd by 14.5 percent since 1966.

Fruit and Vegetables

Brazil - Record Orange Crop

The orange crop in São Paulo, 70 to 80 percent of Brazil's production, is forecast to reach 58.3 million boxes or 2.3 million metric tons - a 26 percent increase over last year. The crop increase coincides with a 30 to 40 percent increase in processing capacity. Almost all of Brazil's processed citrus juice is exported.

Special Products

New Zealand Wool Prices

Wool prices reached a 20 year high in Auckland on August 11, 1972. The average price was estimated at NZ\$0.95 per kilo - more than double last year's price.

General

Occidental - U.S.S.R. Fertilizer Deal

According to the Washington Post, the Occidental Petroleum Corporation in the U.S. is on the verge of closing a 20 year agreement with the Soviet Union for the sale of fertilizer chemicals potentially worth \$3 billion.

The fertilizer deal is the largest contract to come out of a general commercial agreement reached in early July. The agreement called for general co-operation in five areas - fertilizers, metal processing, oil and gas exploration in Siberia, hotel construction and a world "trade centre" in Moscow - but left the details to be worked out in specific contracts.

Increase in Irish Silage Production

To feed their expanding cattle herd, the Irish have increased silage production ten-fold in the past eight years. Commercial cattle ration sales and production have slumped drastically.

PUBLICATIONS

ECONOMICS BRANCH PUBLICATIONS

The Application and Distribution of Serial Spraying in Canada 1971. L.E. Philpotts, Economics Branch and R. Papillon, Canadian Transport Commission. 14p. Tables, maps. Ottawa, 1972.

AGRICULTURE CANADA PUBLICATIONS

Available from Information Division, Agriculture Canada, Ottawa, Canada, K1A 0C5

Combine Operation and Adjustment. O. Friesen, Agricultural Engineer, Manitoba Department of Agriculture. Published by agreement by Agriculture Canada. 30p. Illus. Free. Ottawa, 1972. Pub. No. A73-1464.

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Agricultural Trade in Europe. Part I: Recent Developments in the Trade in Agricultural Products in Europe. Part II: The European Market for Fruit and Vegetables. 135p. Tables. Price: U.S.\$2.85. New York, 1972. Pub. No. ST/ECE/AGRI/42.

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World Animal Review No. 1. A new quarterly journal devoted to world developments in animal production, animal health and animal products. 48p. Tables, photos, charts, maps, pub. list. FAO, Rome, 1972.

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An Economic Appraisal of the Market for Ontario Flue-Cured Tobacco. H.B. Huff, B.B. Perkins and S.M. Smith. 81p. Tables, graphs, bibliography. School of Agricultural Economics and Extension Education, University of Guelph. Guelph, July 1972. Pub. No. AE/72/8.

1972 Industrial Milk Producer's Guide. C.H. McNaughton and Peter M. Herner. Animal Industry Branch, Manitoba Department of Agriculture. 15p. Tables. Winnipeg, 1972. Pub. No. 534.

IN REPLY TO AUTHORS AND EDITORS REGARDING OCTOBER 72
CANADIAN FARM ECONOMICS

I have read the following article(s):

- (1) Dairy Price Support in Canada, 1962-1972
- (2) Canadian Hog Prices Within a North American Market
- (3) Perspective on the Canadian Sheep Industry
- (4) Costs and Returns on Fruit Farms

My comments are on article number

This article was: not useful 1 2 3 4 5 6 7 8 9 10 very useful.

Because (e.g., The most important economic and social factors were studied. The work was well documented and the conclusions were useful to me).

Beefs Bouquets (Suggestions to authors, publications committee and editors)

My comments may () may not () be used in a future issue of this publication if the editor wishes.

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Please place this sheet in an envelope and address it to:

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CANADIAN FARM ECONOMICS

IN REPLY

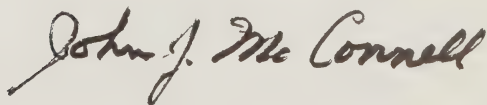
As of today (December 18), thirty letters have been received from the readers of this publication since I wrote to you in the last issue. That is encouraging! To each one of you, who have taken the time and trouble to reply, I would like to say thank you for your suggestions and comments. I would also like you to know that each author receives a copy of your reply so that he may have the benefit of your ideas and act upon them when he believes that it is necessary.

What are most readers saying in their letters of reply? Here is a condensed version of their comments:

- * The sections in the publication on the abstracts, the Policy and Program Developments in Canada and the Publications section are very popular.
- * Some readers would like to see articles by economists who are not employees of the Economics Branch of Agriculture Canada.
- * The article on Dairy Price Support in Canada received a number of compliments. More articles on this subject were suggested. In this issue we have an article on this subject by Dr. Mestern.
- * It has been suggested that there be one or more articles on rural life and the problems of adjustment out of agriculture.
- * The article on the Costs and Returns on Fruit Farms brought encouraging comments.
- * Other letters suggested articles on the effectiveness of co-operative farms to relieve the economic crisis in agriculture and the use of computer services on the farm. We also received suggestions to make greater use of charts and graphs and to start a section for a forum for debate and for the exchange of views and information.

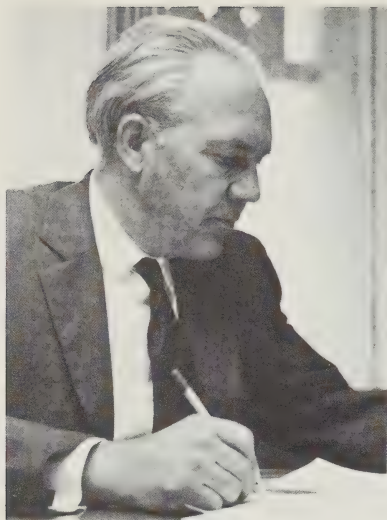
You will see further details for replying to articles in this issue on the last page. Your comments are welcome.

So long for now.



J.J. McConnell,
Managing Editor.

AGRICULTURAL FINANCE SITUATION AND OUTLOOK OBSERVATIONS



R.S. Rust*

"There is a growing confidence on both the part of farmers and credit suppliers in the improved economic prospect for agricultural products."

"The fact that it is the larger farms that use the most credit indicates that the extent of financing required in agriculture will continue to increase."

"The amount of long-term loans to farmers is expected to be as great or even greater than in 1972, with a trend away from a concentration of loans in the short-term range."

"It is expected that interest rates will be from one-half of one percent to one percent higher in 1973 than in 1972."

The slow down in the flow of credit into agriculture which became very evident in 1968 did not change significantly until late in 1970 when monetary restrictions were eased. Although a 3.2 percent increase in flow occurred in 1970, the total credit extended was still slightly lower than in 1967. Improved economic prospects for agricultural products (especially western grains), increased money supply, and the easing of credit conditions resulted in a large amount of short-term credit being extended. The 17.9 percent increase in farm credit in 1971 was the largest ever recorded. The increase in flow for 1972 may be even greater. In the early part of 1973 this rate of increase is likely to continue but toward the latter part of the year a slight decline towards the more normal increase of 11 to 12 percent per year may occur.

In 1967, 1968, 1969 and 1970 an estimated \$2,270 million, \$2,177 million, \$2,169 million and \$2,240 million respectively of credit in various forms was extended to farmers from all known sources. The

increase to \$2,641 million extended in 1971 (Table 1) for the most part appears to have been largely used for the re-payment of credit received during the 1968 to 1970 period. Arrears in long-term loan payments were consolidated and short-term loans taken out in 1969 and 1970 to cover debts and necessities were, in many cases, repaid during 1971. The outstanding feature of the credit extended to farmers in the 1967 to 1971 period was the very noticeable increasing proportion each year that was in the short-term category. In 1967, 16.7 percent of all credit extended was in the long-term classification whereas by 1971, only 7.8 percent of the total was in this category. While the percent of total credit in the intermediate-term range of 18 months to ten years only decreased from 22.2 percent to 20.0 percent, short-term credit increased from 61.1 percent in 1967 to 72.2 percent in 1971. Many reasons can be given for this shift. Suppliers of credit tend to state that it was caused by a lack of demand for longer term credit, while many farmers claim the main reasons were a lack of supply and the conditions associated with the supply. Between 1967 and 1970 it was evident that supply conditions and unencouraging economic prospects for certain agricultural products both contributed to the change. In Western Canada, during 1968 and particularly during 1969 and part of 1970, farm income on many farms was not sufficient to meet current operating

*Dr. R.S. Rust has been an economist with Agriculture Canada since 1959. In reviewing the current situation and outlook on farm financing in this article, Dr. Rust draws special attention to interest rates, the length of intermediate — term loans and the income tax paid by farmers. In his article, Dr. Rust includes some of his outlook observations on agricultural finance.

TABLE 1 — ESTIMATED FARM CREDIT EXTENDED, CANADA 1960 AND 1967 TO 1971^a

Source and Term of Credit	1960	1967	Estimated farm credit extended			1970	1971	Estimated average interest rate 1970	Estimated average interest rate 1971	Percent of credit extended by source 1971
			1968	1969						
— million of dollars —										
LONG-TERM (more than 10 years)										
Farm Credit Corporation	52.3	251.2	205.3	158.0		116.5	109.7	8.7	7.7	4.2
Veteran's Land Act	19.4	31.3	20.1	17.9		10.5	20.6	8.6	7.7	0.8
Provincial government agencies	37.0	63.6	60.4	42.8		42.4	47.2	4.2	3.8	1.8
Private individuals	7.0	16.0	15.0	17.0		20.0	22.0	8.0	7.0	0.8
Insurance, trust and loan companies	3.0	13.0	13.0	7.0		5.0	3.0	12.0	10.7	0.1
Treasury Branches (Alberta)	1.6	1.4	1.0	1.0		0.8	1.7	9.2	8.5	b
Alberta Electrical Co-operatives	2.0	2.0	2.0	2.0		1.6	1.8	3.5	3.5	0.1
Total long-term	122.3	378.5	316.8	245.7		196.8	206.0	7.7	6.8	7.8
INTERMEDIATE-TERM (18 months to 10 years)										
Banks (FILA)	101.9	203.7	40.2	142.0		103.0	147.4	8.3	7.0	5.6
Banks (other than FILA)	—	—	—	20.0		30.0	55.0	8.7	7.2	2.1
Private individuals	75.0	134.0	130.0	144.0		148.0	146.0	8.0	7.0	5.5
Supply companies	29.0	43.0	35.0	31.0		40.0	51.0	15.5	14.5	1.9
FCC (loans to farm syndicates)	—	1.0	1.7	2.9		1.8	1.9	8.4	1.9	0.1
Insurance, trust and loan companies	0.5	4.0	5.0	7.0		8.0	10.0	12.0	11.0	0.4
Industrial Development Bank	—	6.1	8.4	9.5		9.5	17.4	10.0	9.5	0.4
Credit Unions	4.0	90.0	70.0	40.0		63.0	82.4	10.5	9.1	3.1
Municipalities (Ontario Tile Drain. Act)	1.0	2.6	4.3	5.1		5.8	5.9	4.0	4.0	0.2
Finance companies (cars and trucks)	8.0	16.0	15.0	11.0		9.0	13.0	16.0	13.5	0.5
Treasury Branches (Alberta)	0.3	2.7	2.3	3.0		2.1	4.4	8.6	7.5	0.2
Total intermediate-term	219.7	503.1	311.9	415.5		420.2	528.4	9.4	8.3	20.0
SHORT-TERM (up to 18 months)										
Banks (other than FILA)	302.0	733.0	895.0	990.9		1,126.0	1,314.0	9.4	8.2	49.8
Supply companies	237.0	348.0	300.0	218.0		203.0	275.0	16.5	15.0	10.4
Credit unions	55.0	150.0	187.0	116.0		109.0	134.4	9.7	9.4	5.1
Finance companies (household & personal)	6.0	15.0	12.0	13.0		9.0	12.0	18.0	18.0	0.5
Dealers, stores, etc.	25.0	15.0	14.0	12.0		9.0	10.0	16.0	16.0	0.4
Private individuals	55.0	110.0	105.0	115.0		120.0	105.0	8.0	7.0	4.0
Treasury Branches (Alberta)	8.0	16.4	17.1	19.0		22.0	24.7	8.0	0.9	0.9
Sedco (Saskatchewan)	—	1.0	0.6	4.8		0.5	1.2	9.8	9.6	b
Co-operative programs	—	—	17.3	19.0		24.0	19.0	9.8	9.6	1.1
Total short-term	688.0	1,388.4	1,548.5	1,507.7		1,622.5	1,906.3	10.3	9.3	72.2
Total all credit	1,030.0	2,270.0	2,177.2	2,168.9		2,239.5	2,640.7	9.9	8.9	100.0

^a For years 1961 to 1966 see R.S. Rust, A Review of Farm Credit and Farm Income Relationships, Canadian Farm Economics, Vol. 5, No. 2, June 1970.^b Less than 0.1 percent.

TABLE 2 — ESTIMATED FARM CREDIT OUTSTANDING, CANADA, 1960 AND 1967 TO 1971 a

Source and Term of Credit	Estimated farm credit outstanding					Estimated average interest rate 1970	Estimated average interest charge 1970	Estimated average interest rate 1971	Estimated average interest charge 1971	Percent of credit outstanding by source 1971
	1960	1967	1968	1969	1970						1971
	— million of dollars —						million of dollars		million of dollars	
LONG-TERM (More than 10 years)										
Farm Credit Corporation	158.4	915.8	1,036.1	1,111.5	1,154.1	1,182.5	66.94	5.9	69.77	25.1
Veteran's Land Act	91.2	172.3	180.4	167.5	155.9	151.5	8.89	5.8	8.79	3.2
Provincial government agencies	160.0	332.3	351.7	372.1	398.1	395.7	15.13	3.9	15.43	8.4
Private individuals	31.0	65.0	67.0	70.0	75.0	80.0	4.20	6.0	4.80	1.7
Insurance, trust and loan companies	12.0	56.0	60.0	58.0	54.0	49.0	4.91	9.3	4.56	1.0
Treasury Branches (Alberta)	1.2	1.5	1.4	1.0	1.9	3.1	0.17	8.9	0.28	0.1
Alberta Electrical Co-operatives	19.7	17.2	16.8	16.1	15.3	14.1	0.54	3.5	0.49	0.3
Total long-term	473.5	1,560.1	1,713.4	1,796.2	1,854.3	1,875.9	100.78	5.6	104.12	39.8
INTERMEDIATE-TERM (18 months to 10 years)										
Banks (FILA)	178.1	432.6	308.5	306.1	296.0	321.0	23.38	7.8	25.04	6.8
Banks (other than FILA)	—	—	—	21.0	30.0	50.0	2.52	8.3	4.15	1.1
Private individuals	300.0	538.0	510.0	560.0	550.0	540.0	35.75	6.3	34.02	11.5
Supply companies	78.0	131.0	120.0	134.0	121.0	130.0	18.76	14.5	18.85	2.8
FCC (loans to farm syndicates)	—	2.2	3.4	4.8	6.1	6.8	0.46	7.7	0.52	0.1
Insurance, trust and loan companies	4.0	19.0	20.0	18.0	16.0	15.0	1.71	9.7	1.46	0.3
Industrial Development Bank	—	22.0	23.0	26.0	29.0	34.0	3.04	9.5	3.23	0.7
Credit Unions	5.0	120.0	125.0	103.0	84.0	104.0	9.7	8.63	9.5	9.88
Municipalities (Ontario Tile Drain, Act)	4.2	10.2	12.9	16.1	19.6	22.8	4.0	0.78	4.0	0.91
Finance companies (cars and trucks)	10.0	23.0	21.0	18.0	19.0	21.0	16.0	15.0	3.15	0.4
Treasury Branches (Alberta)	0.4	2.8	3.9	3.9	4.0	4.9	0.34	8.0	0.39	0.1
Total intermediate-term	579.7	1,300.8	1,147.7	1,210.9	1,177.7	1,249.5	98.41	8.1	101.60	26.5
SHORT-TERM (up to 18 months)										
Banks (other than FILA)	241.5	586.6	716.0	792.7	880.6	1,006.9	87.18	8.8	93.01	21.4
Supply companies	178.0	261.0	242.0	254.0	230.0	220.0	37.95	15.0	33.00	4.7
Credit Unions	45.0	120.0	150.0	220.9	181.0	204.0	17.20	9.5	19.38	4.3
Finance companies (household & personal)	5.0	12.0	10.0	12.0	9.0	10.0	1.71	18.0	1.80	0.2
Dealers, stores, etc.	8.5	5.0	5.0	6.0	7.0	6.0	1.19	16.0	0.96	0.1
Private individuals	44.0	88.0	90.0	95.0	95.0	90.0	7.60	7.0	6.30	1.9
Treasury Branches (Alberta)	6.0	13.5	13.7	17.7	20.5	23.2	1.70	7.5	1.74	0.5
Sedco (Saskatchewan)	—	1.5	1.7	2.4	5.3	6.8	0.51	9.4	0.64	0.2
Co-operative programs	—	—	12.3	12.0	11.3	16.0	1.11	9.7	1.55	0.3
Unpaid taxes	1.8	2.2	3.0	5.0	7.0	6.0	0.42	6.0	0.36	0.1
Total short-term	529.8	1,089.8	1,243.7	1,417.7	1,446.7	1,588.9	156.57	10.0	158.74	33.7
total all credit	1,583.0	3,950.7	4,104.8	4,424.8	4,480.7	4,714.3	355.76	7.7	364.46	100.0

a For years 1961 to 1966 see R.S. Rust, A Review of Farm Credit and Income Relationships, Canadian Farm Economics, Vol. 5, No. 2, June 1970.

expenditures and living costs and at the same time allow for the re-payment of loans and the overdue payments on credit received from supply companies. The result was a further increase in short-term loans and an extremely large proportion of farm security being put in creditors' hands. This partly explains why in 1971, the proportion of long-term credit continued to decline in spite of a significant increase in the total amount of credit used by farmers. The extensive increase in the amount of long-term loans in 1972 will not greatly increase the overall proportion in this category. However, the start of a reversal of the trend away from such a concentration in short-term credit indicates that the most pressing debts have been repaid and that there is a growing confidence on both the part of farmers and credit suppliers in the improved economic prospects for agricultural products.

The degree of change in the composition of the types of credit received by farmers is more easily identified by the data in Table 3 than it is in Table 1. However, the data in these Tables do not reflect the apparent lack of supply or demand for credit in the five to ten year range of the intermediate-term category. FILA loans are estimated to have an average term of approximately three years. Relationships between credit extended and credit outstanding on Industrial Development Bank loans to farmers suggest an average term of less than five years. Supply company credit is for the most part well below an average of three years with machinery companies providing the longest terms. Credit Unions, although involved in mortgage loans within the intermediate-term range do not apparently have a very large proportion that would exceed three years. The length of bank loans associated with land purchases is

not known but the amount in this category is relatively small and it appears unlikely, based on other credit activity in the agricultural credit field, that such loans are for an average period in excess of five years. The only major credit supply source in the intermediate range of from five to ten years appears to be private individuals comprised mostly of former farm owners. The need and desires of former farmers, as they progressively move to larger towns and cities in order to fulfill their objectives, are expected to increase their demand for larger down payments on the farms they sell, and for shorter terms on the remaining balances. If this view is correct, it means that fewer long-term loans from this source may be expected in future.

The growing provincial interest in the guaranteeing of livestock loans to farmers through banks and other credit institutions for terms of from five to ten years suggests that the needs of farmers in this area may not have been met in the past. However, until it is evident that credit for such purposes is available in quantity to farmers for such time periods, it will be difficult to assess the extent of that need. Unlike long-term loans from provincial sources, very little, if any subsidization is involved.

As might be expected, data on farm debt (Table 2) do not as sharply reflect the changes that occurred in farm financing during the 1967 to 1971 period as do the data on credit flow into agriculture. In 1967 an estimated \$3,951 million was outstanding on farm accounts. By 1971 this had steadily increased to \$4,714 million. The cost of this credit increased from an estimated \$340 million in 1969 to \$356 million in 1970 and further increased to \$364 million in 1971. While the average

TABLE 3 — ESTIMATED PERCENT OF FARM CREDIT EXTENDED AND OUTSTANDING BY LENGTH OF TERM, 1960 TO 1971 INCLUSIVE.

Year	Farm credit extended			Farm credit outstanding		
	Long term	Intermediate term	Short term	Long term	Intermediate term	Short term
percent of total						
1960	11.9	21.3	66.8	29.9	36.6	33.5
1961	12.0	20.2	67.8	31.5	35.0	33.5
1962	11.6	20.2	68.2	32.3	34.0	33.7
1963	11.9	21.1	67.0	33.2	33.6	33.2
1964	13.7	21.6	64.7	34.5	33.8	31.7
1965	15.7	23.4	60.9	36.3	34.2	29.5
1966	17.0	23.6	59.4	38.5	34.0	27.5
1967	16.7	22.2	61.1	39.5	32.9	27.6
1968	14.6	14.3	71.1	41.7	28.0	30.3
1969	11.3	19.2	69.5	40.6	27.4	32.0
1970	8.8	18.8	72.4	41.4	26.3	32.3
1971	7.8	20.0	72.2	39.8	26.5	33.7

TABLE 4 — ESTIMATED NUMBER OF FARMS, FARM RECEIPTS, FARM EXPENSES, NET FARM INCOME, REALIZED NET FARM INCOME, FARM CREDIT EXTENDED, FARM CREDIT OUTSTANDING AND AVERAGE ANNUAL CHANGES, CANADA 1960 TO 1971.

Year	Number of farms ^a	Farm receipts ^a	Farm expenses ^a	Net farm income ^a	Realized net farm income ^a	Farm credit extended ^b	Farm credit outstanding ^b
millions of dollars							
1960	497,822	2,812	2,036	1,196	1,128	1,030	1,583
1961	479,125	2,924	2,072	922	1,195	1,150	1,785
1962	469,058	3,182	2,207	1,526	1,332	1,288	2,018
1963	458,991	3,215	2,362	1,521	1,219	1,461	2,298
1964	448,924	3,504	2,509	1,292	1,378	1,642	2,613
1965	438,857	3,819	2,712	1,567	1,519	1,863	3,004
1966	428,794	4,295	2,994	1,949	1,744	2,022	3,444
1967	416,049	4,383	3,221	1,475	1,626	2,270	3,951
1968	403,304	4,364	3,351	1,710	1,505	2,177	4,105
1969	390,559	4,200	3,443	1,564	1,274	2,169	4,425
1970	377,814	4,197	3,504	1,274	1,209	2,240	4,481
1971	365,068	4,513	3,661	1,594	1,360	2,641	4,714
percent							
1960 to							
1971	-26.7	+60.5	+79.8	+33.3	+20.6	+156.4	+197.8
1969 to							
1971	-16.8	+18.2	+35.0	+1.7	-10.5	+41.8	+56.9

^aExcluded Newfoundland, Yukon and Northwest Territories.

^bIncludes all of Canada.

Sources: *Farm Cash Receipts*, Cat. No. 21-001, Annual, Statistics Canada.

Farm Net Income, Cat. No. 21-202, Annual, Statistics Canada.

interest rate on all credit used by farmers decreased from 9.9 in 1970 to 8.9 percent in 1971, the decrease would have been even greater had it not been for certain sources maintaining rates at or near previously existing levels. In contrast to this, the interest rate on farm debts only decreased by 0.2 percent due largely to the extensive amount of short-term credit obtained in 1969 and 1970 at very high rates.

It has been noted that the average interest rate on credit to farmers in 1971 was 8.9 percent. The average on long-term, intermediate-term and short-term credit was 6.8, 8.3 and 9.3 percent respectively. The prime bank rate in 1971 decreased from 7.5 percent to seven percent on January 15, to 6.5 percent on March 1, to 6.25 percent on October 25, and to 6.0 percent on November 1 and has remained at this level throughout 1972. Bank officials estimate that the prime rate applying on all agricultural loans probably averaged about 8.17 percent in 1970 and 6.48 percent in 1971. The estimated additional bank charges on loans to farmers varied from 1.5 to 2.5 percent above these rates. The changes in rates during the 1969 and 1970 period can not be adequately related to the amount of agricultural credit extended

during a specific period within a given year. The average interest rate on credit extended to farmers in 1970 and 1971 respectively varied from 7.7 to 6.8 percent on long-term credit, from 9.4 to 8.3 percent on intermediate-term credit and from 10.3 to 9.3 on short-term credit. The average rates of 4.2 and 3.8 percent for 1970 and 1971 on loans from provincial credit agencies in most cases reflected extensive subsidization. These averages were particularly affected by the amount of loans and heavily subsidized rates which applied to Quebec. Since rates applying to FCC and FILA loans are based on average yields during a previous six month period of the Government of Canada bonds maturing in from five to ten (FCC) and one to ten (FILA) years plus an operating margin and are only changed twice a year, they were generally lower in 1970 and 1971 than other rates. While bank officials reported that prime rates averaged 8.17 percent in 1970 and 6.48 percent in 1971, the Alberta Treasury Branches reported that their prime rate was and had been consistently lower than the prime rate of banks by nearly one-half of one percent and, that in most cases during the 1968 to 1971 period the additional charge over their basic rate on agricultural loans had been kept close to the one

TABLE 5 — ESTIMATED NUMBER OF FARMS, AVERAGE FARM RECEIPTS, EXPENSES, NET INCOME, REALIZED NET INCOME, CREDIT, CREDIT USED AND DEBT, CANADA 1960 TO 1971.

Year	Number of farms ^a	Average farm receipts ^a	Average farm expenses ^a	Average net income ^a	Average realized farm income ^a	Average farm credit received ^b	Average farm debt ^b
dollars per farm							
1960	497,822	5,649	4,090	2,402	2,266	2,061	3,168
1961	479,125	6,103	4,324	1,924	2,494	2,391	3,712
1962	469,058	6,784	4,705	3,253	2,840	2,736	4,286
1963	458,991	7,004	5,141	3,314	2,656	3,171	4,988
1964	448,924	7,805	5,589	2,878	3,070	3,643	5,798
1965	438,857	8,702	6,180	3,571	3,461	4,228	6,818
1966	428,794	10,016	6,962	4,545	4,067	4,697	8,000
1967	416,049	10,535	7,742	3,545	3,908	5,456	9,460
1968	403,304	10,821	8,309	4,240	3,732	5,378	10,142
1969	390,559	10,754	8,816	4,004	3,262	5,535	11,292
1970	377,814	11,109	9,274	3,372	3,200	5,910	11,823
1971	365,068	12,362	10,028	4,366	3,725	7,213	12,875
Period Change							
percent							
1960 to 1971	-26.7	+118.8	+145.2	+81.8	+64.4	+250.0	+306.4
1965 to 1971	-16.8	+42.0	+62.3	+22.3	+7.6	+70.6	+88.8

^aExcludes Newfoundland, Yukon and Northwest Territories.

^bAverages based on estimated total number of farms in Canada.

percent level. The difference in the prime rates of the two types of institutions is not easily explained.

In the Prairie Provinces there are indications that some credit unions may have made a special attempt to keep rates on farm loans as low as possible during 1969 and 1970. While the average rate on credit union loans to farmers was only slightly affected by the rates on the small number of FILA loans they extended, the average rate on farm loans made by Caisses Populaires was significantly affected by the low net rates resulting from Quebec Farm Improvement Loan subsidies. Little is known concerning the average rates charged on mortgages by former farm owners but fragmentary evidence suggests that while the usual lag behind prevailing rates continues to exist, the scarcity of money, the high prevailing credit rates and increases in living costs during 1968 to 1970 may make the interest rate lag shorter in the future. In the rates shown in Table 1 very little allowance and in many cases, no allowance, was made for hidden charges such as interest charges which are paid in advance of receiving loans.

While the number of farms in Canada decreased by about 15 percent between the census years of 1966 and 1971, there was only a decrease of 2.6 percent in total area farmed. However, there was an increase of about 6.2 million acres in land rented by farm owners. The

number of farms with sales over \$10,000 increased from 22 percent of the total number of farms in 1966 to 31 percent in 1971. At the same time, the number of farm reporting sales under \$5,000 decreased from 237,857 to 170,047, a decrease of 29 percent. During the census year 1966, the realized net farm income of farmers was \$1,744 million. This dropped to \$1,626 million, \$1,505 million, \$1,274 million and \$1,209 million in 1967, 1968, 1969 and 1970 respectively and then increased slightly to \$1,360 million in 1971¹. While credit extended to farmers increased in 1967, it decreased the following year and did not exceed the 1967 level until 1971. Credit statistics would appear to indicate that while a considerable number of farms were purchased and added to existing farms during the early part of the intercensus years, the land taken out of agriculture and the increase in land rented by farm owners mostly occurred between 1968 and the mid-summer of 1971.

¹Based on preliminary results from the 1972 Agricultural Enumerative Survey, off-farm income of all members of farm operators families (including all persons related to the operator who lived in his dwelling plus persons temporarily away at school) amounted to \$1,546 million in 1971. The average was \$4,200 per census farm. This does not mean, however, that this amount was available to farm operators. Over one-half of the off-farm income represented wage and salary earnings. About one-half of census farm operators reported some wage and salary earnings in 1971.

TABLE 6 — ESTIMATED TOTAL FARM RECEIPTS, FARM EXPENDITURES, NET FARM INCOME, REALIZED NET FARM INCOME, FARM CREDIT EXTENDED AND FARM CREDIT OUTSTANDING FOR FARMS HAVING \$5,000 OR MORE IN SALES IN CENSUS YEARS 1961, 1966 AND 1971. (a)

Census Years	Number of farms (b)	Farm receipts (c)	Farm expenses (c)	Net Farm income (c)	Realized net farm income (c)	Credit extended (d)	Credit outstanding (d)
— Millions of Dollars —							
1961	140,057	2199	1558	693	899	865	1342
1966	191,666	3801	2650	1725	1543	1789	3048
1971	195,061	4156	3372	1468	1252	2432	4342

(a) Represents 75.8 percent of 1961, 88.5 percent of 1966 and 92.1 percent of 1971. Financial data shown in Table 5, for derivation see text.

(b) Excludes Newfoundland, Yukon, Northwest Territories, Institutional farms and farms with less than \$5,000 in sales of farm products.

(c) Excludes Newfoundland.

(d) Includes all Canada.

The significant increase in long-term credit, as well as some increase in credit in the intermediate-term range in 1972 may be reflected in the purchase of some of the increase in the rented land that was indicated by the 1971 census. This is expected to result more from the need of former farmers to get as much capital as possible out of their farm investment than from a strong desire for ownership by the present operators. The movement of former farmers to urban areas, the cost of new homes, costs of adjustment, high costs of living and retirement needs are steadily increasing. These, in turn, signify that a decreasing proportion of former farmers will be willing to rent their land if there is any possibility of selling it. The increasing costs of urban living also are expected to result in former farmers asking for shorter repayment terms. The experience of those farmers who relied on farm rental income during the 1969 to 1971 period when realized net farm incomes were so low, is expected to dampen any desire of farmers currently thinking of quitting farming to rent their land. These factors and the fact that it is the larger farms that use the most credit all indicate that the extent of financing required in agriculture will continue to increase.

In Table 4, data are presented which indicate relationships between credit, farm receipts, expenditures, farm income and farm credit for the period 1960 to 1971. While not entirely comparable to census data, the extent of change indicated in each of these items between 1966 and 1971 does account, in a large part, for the changes in agriculture that were revealed by the 1971 census.

In Table 5, the data are the result of converting national data in Table 4 to dollar averages per farm. The average farm had \$12,362 in farm receipts in 1971, \$10,028 in farm expenses and \$3,725 in realized net income but at the same time each farm borrowed \$7,213 during the

year and at the end of the year had \$12,875 in debts. Since it has been previously indicated that 170,047 farms reported farm product sales of less than \$5,000 in the 1971 census and since it is well known that most small farms do not receive extensive credit, it is apparent that the data shown in Table 4 and Table 5 would be considerably more representative of commercial farms, if the data that applies to these small farms were deleted. Unfortunately there is no precise way of doing this.

Using census data on farm receipts in each sub-range below \$5,000 and the corresponding number of farms in each sub-range it is possible to estimate the approximate amount of cash receipts received by each sub-range group. In the present calculation instead of using the mid-point (50 percent) of the farm receipt sub-ranges in all categories below \$5,000, the 60 percent point was used. This point was used as the representative amount received by each farmer in each sub-range to obtain an estimate of the total cash receipts of farmers having product sales below \$5,000. When institutional farms were excluded from the 365,068 farms indicated for 1971 in Table 4, it was estimated that 169,231 farms received 7.9 percent of the total 1971 receipts. When the same technique was applied to 1966 statistics, 236,351 small farms received 11.5 percent of total farm receipts. When it was applied to 1960, 338,254 farms received 24.2 percent of such receipts. Therefore it can be assumed that farmers having over \$5,000 in farm sales received 92.1, 88.5 and 75.8 percent of total farm receipts in 1971, 1966 and 1960 respectively. These percentages were then applied to monetary data in Table 4 to derive the estimates applying to farms having sales of over \$5,000 (Table 6). The derived estimates indicate that for 1971, 195,061 farms received \$4,156 million in farm receipts, \$1,252 million in realized net income and had \$4,342 million in farm debt. The significance of the

TABLE 7 — ESTIMATED AVERAGE FARM RECEIPTS, FARM EXPENDITURES, NET FARM INCOME REALIZED NET FARM INCOME, FARM CREDIT EXTENDED AND FARM CREDIT OUTSTANDING FOR FARMS HAVING \$5,000 OR MORE IN SALES IN CENSUS YEARS 1961, 1966 AND 1971 (a).

Census years	Number of farms	Farm receipts	Farm expenses	Net Farm income	Realized net farm income	Credit extended	Credit Outstanding
— Dollars per Farm —							
1961	140,057	15,701	11,124	4948	6419	6167	9568
1966	191,666	19,831	13,826	9000	8050	9323	15,884
1971	195,061	21,306	17,287	7526	6418	12,452	22,232

(a) Averages per farm are derived from data in Table 7.

TABLE 8 — THE RATIO OF FARM DEBT TO FARM INVESTMENT, CANADA 1960 TO 1971.

Year	Farm Debt	Investment in farm real estate, machinery and livestock ^a	Debts as a percent of real estate machinery, and livestock investment	Estimated total investment of farmers ^b	Debt as a percent of total investment
	millions of dollars			millions of dollars	
1960	1,583.0	12,680.0	12.5	14,088.9	11.2
1961	1,785.1	13,159.2	13.6	14,621.3	12.2
1962	2,017.8	13,669.7	14.8	15,188.6	13.3
1963	2,297.6	14,508.5	15.8	16,120.6	14.2
1964	2,613.3	15,744.1	16.6	17,493.4	14.9
1965	3,004.4	17,217.8	17.4	19,130.9	15.7
1966	3,444.2	19,062.7	18.1	21,180.8	16.3
1967	3,950.7	20,952.6	18.8	23,280.6	17.0
1968	4,104.8	22,452.4	18.3	24,947.1	16.4
1969	4,424.8	23,356.3	18.9	25,951.4	17.0
1970	4,480.7	23,733.9	19.1	26,037.7	17.2
1971	4,714.3	23,684.1	19.9	26,315.7	17.9

^aSource: *Quarterly Bulletin of Agricultural Statistics*, Cat. No. 21-003, Dominion Bureau of Statistics. (Excludes Newfoundland, Yukon and Northwest Territories.)

^bNinety percent of total investment is estimated to be in farm real estate, machinery, equipment and livestock, and ten percent in other investments.

new estimates became more apparent when the data in this Table were converted to averages per farm (Table 7) and then compared with similar data in Table 5. While data in Table 5 show average receipts for all farms to be \$12,362 in 1971, the data in Table 7 indicate that for those farms having sales of \$5,000 or over, average farm receipts were \$21,306. Similarly farm expenses changed from an average of \$10,028 to \$17,287, realized net farm income from an average of \$3,725 per farm to \$6,418, credit extended from \$7,213 to \$12,452, and farm debt from \$12,875 to \$22,232 per farm. While undoubtedly a much more precise measurement can be developed to determine the probable amounts that apply to each financial item in Tables 5 and 7, these data provide a rough approximation of what may be expected

when data on farm receipts, farm expenditures, farm income and credit for the larger farm can be adequately separated from that which applies to all farms.

In Table 6 and 7, it was estimated, omitting farms in Newfoundland, the Yukon, the North-West Territories and institutional farms that there were 140,057 farms in 1961, 191,666 farms in 1966 and 195,061 farms in 1971 that had farm sales of \$5,000 or over. Assuming these farms would be the most likely to pay income tax and recognizing that the variability of farm incomes and expenditures would eliminate many farms in specific years, it is of interest that 74,469 farmers filed taxable returns in 1961, 145,828 in 1966 and 116,084 in 1970 (1971 data not available).



The ratio of farm debt to farm investment increased less between 1969 and 1970 than in any year since 1960. In contrast, the ratio for 1971 of 17.9 percent represented an increase of 0.7 percent over the previous year. This increase had not been exceeded since 1966 (Table 8). While the ratio of 17.9 percent appears relatively low, the actual ratio that applies to the larger commercial farmer is probably not well represented by this statistic. From the findings in Tables 6 and 7, it appears that a significantly different ratio would be obtained if it were possible to adequately segregate debt and investment data pertaining to these farms.

In 1961 farmers had a total income tax payable of \$27.0 million on a total assessed income of \$324.3 million which included \$263.9 million in farm income, \$27.3 million in wages and salaries and \$12 million in bond and bank interest. Taxable income assessed was \$168.9 million. By 1966 the total tax payable on 145,828 returns was \$73.7 million on a total assessed income of \$759.1 million which included \$614.1 million in farm income, \$73.0 million in wages and salaries and \$28.9 million in bond and bank interest. The total taxable income assessed was \$396.8 million. While the income tax paid by 116,084 farmers in 1970 was nearly identical to that paid by 145,828 farmers in 1966, the amount reported for salaries and wages increased considerably. For 1970 the total income tax payable by farmers was \$72.6 million on a total assessed income of

\$610.2 million which included farm income of \$413.6 million, \$83.8 million in wages and salaries and bond and bank interest of \$56.7 million. The total taxable income assessed for this year was \$329.7 million while the total assessed income on the 160,682 taxable and non-taxable returns was \$774.4 million².

The extent to which farmers use credit to pay taxes is extremely difficult to determine. At the municipal level it has, at various times, been estimated that from 10 to 15 percent of tax payments are met through the use of credit. The amount borrowed to pay federal and provincial income taxes probably increases significantly in years when farm incomes are comparatively low. Of increasing interest is the amount of credit that will be eventually required to pay capital gains, estate, and gift taxes related to the transfer of relatively large farm estates, and the source and conditions under which this credit will be provided.

Since the Prairie Provinces normally use approximately 50 percent of all the credit extended to farmers in Canada, the current situation and the outlook for grains and beef cattle have a very significant effect on the future flow of credit into agriculture. The very large increase in net farm income this year and the current demand for grain and beef have resulted in expansion

² Department of National Revenue, *Taxation Statistics*.

plans being developed by many farmers. It is therefore not expected that the projected decrease of from four to five percent in net farm income in 1973 will have any significant effect on the amount of credit used by farmers next year. While some tightening of money supply and an increase in interest rates are expected, these should have little effect on credit flow into agriculture. The amount of long-term loans to farmers is expected to be as great or even greater than in 1972. The trend away from a concentration of loans in the short-term range which started in 1972 is expected to continue in 1973.

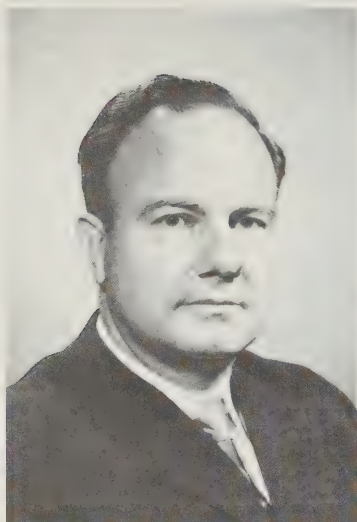
The prime rate on bank loans which decreased to six percent on November 1, 1971, remained at that level in 1972 but is expected to increase in 1973. It also appears likely that the spread between the prime rate and the average lending rate may also be slightly increased. In the past, the rate which farmers have paid has generally been from 1.5 to 2.5 percent above the prime rate. While the range may increase slightly it is not expected to be generally discernable.

It is expected that interest rates will be from one-half of one percent to one percent higher in 1973 than in 1972. The highest business rate increases are expected to be on short-term loans. At the end of 1972 there was a surplus of mortgage funds in lender's hands and this surplus was expected to carry over into 1973. As a consequence, the mortgage rate increase in 1973 is not expected to exceed one-half of one percent.

In agricultural finance, a lag in interest rate increases on loans or credit from certain suppliers is not uncommon. However, when general decreases in interest rates take place a similar lag in decreasing rates by these suppliers may also occur. Both types of lags were observable in credit statistics for the 1968 to 1971 period. It is therefore possible that any general increases in interest rates in 1973 may not be fully reflected in the interest rates reported for that year.

Interest rates on agricultural loans sponsored by the federal government are automatically adjusted on April 1 and October 1 of each year. Under the Farm Credit Act and on land purchase loans under FILA, the interest rate is one percent above the average yield in the proceeding six months on Government of Canada bonds maturing in from five to ten years. Rates on Farm Syndicate Loans and on non-land loans under FILA are determined in a similar manner but on these the yield in the preceding six months on Government of Canada bonds maturing in from one to ten years applies. Using this method it was expected that FCA loans would increase about one percent and non-land loans under FILA about 1.5 percent on October 1, 1972. Fortunately for agriculture, prior to this date the rates on such loans to farmers were frozen for a six month period. What may occur with respect to these rates on April 1 cannot be foreseen. The rate which applies after that date may depend somewhat on whether there is a general interest rate increase by that time.

THE EVOLUTION OF SUPPLY MANAGEMENT IN THE CANADIAN DAIRY INDUSTRY



H.J. Mestern *

The Subsidy Quota system was the first step towards supply management. It covered, initially over eighty percent of the industrial milk and cream.

The root cause of cyclical over-production in the industrial sector was the lack of a guide to the size of the market available to individual producers.

JURISDICTION

Under the Canadian Constitution the provincial governments have jurisdiction over the marketing of Agricultural products within their territories while the Federal governments, jurisdiction covers trade between provinces and international trade.

Fluid Milk Markets under Provincial Jurisdiction

Fluid Milk Markets are generally confined to provincial areas and have been administered by provincial marketing Agencies for several decades. Provincial Milk Acts, and the regulations enacted under them provide for Milk quality, delivery, minimum sanitary conditions on the farm and fluid prices and quotas.

Prices to producers per one hundred pounds of milk for fluid use are set from time to time by provincial Boards, some as a result of public hearings and negotiations, and others by economic formulas. Prices throughout Canada range between \$7.00 and \$8.00 per 100 pounds, f.o.b. Plant, for that portion of deliveries which is used in "Fluid Sales" (e.g. bottled milk for fresh consumption).

A lower price is received for that amount in excess of the requirements for fluid sales, usually closely related to the industrial milk price.

In order to supply fluid Markets adequately each day of the year, fluid producers have a share of the fluid market prorated as a daily fluid quota. For deliveries covered by this quota, the fluid milk Plants pay the "top fluid" price.

Negotiability of fluid quotas between producers provides for a smooth transfer of market shares from producers who are leaving the industry to those who continue and expand. The ability of the latter to plan for the future under conditions of reasonable milk price stability has contributed significantly to the consolidation of dairy units into large and efficient operations which are common among fluid milk producers today.

Fluid producers were operating in effect, a partial Supply Management system. It was partial in that the market shares covered the fluid market only and it was limited in application to provinces. Shipments by fluid producers used for manufacturing purposes entered freely into the Canada-wide market for industrial milk and benefited from the price support for that sector of the industry.

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TABLE 1 – CANADIAN DAIRY COMMISSION PRODUCT SUPPORT PRICES

Product price support for:	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73
— cents/lb —						
Butter	63	63	65	65	65/68 ^a	68
Skim Powder	20	20	20	20	24/26 ^a	29
Cheddar Cheese	38	47	47	47	50/54 ^a	54
—\$/cwt milk —						
Result in Floor Price Target for Industrial Milk	\$3.54	\$3.54	\$3.60	\$3.70	\$3.99/4.24	\$4.53 ^b
Direct Payment Subsidy Rate	1.21	1.31	1.25	1.25	1.25	1.25
Holdback for Export	0.11	0.15	0.26	0.26	0.10	0.10
Market plus Subsidy (before holdback)	\$4.75	\$4.85	\$4.85	\$4.95	\$5.24	\$5.79
(Over-quota holdback rates)	(0.11)	(0.15)	(0.52)	(1.25)	(1.05)	(1.05)
(Over-quota levy rates)	—	—	—	(2.40)	(2.05)	(1.50)

^a Increased Aug 17, 1971, from the first figure to the second.

^b Comparable with earlier years is \$4.44, but market for cheese is above support and producers receive:

In Bulk	In Ontario	\$4.63	—	In Can:	\$4.53
In Tank	In Quebec	\$4.45	minimum		
		\$0.25	dividends		
		\$4.70		In Can:	\$4.60

Federal jurisdiction over the industrial milk sector

Price Support: The producer price for industrial milk and cream is supported by the Federal Government through the Canadian Dairy Commission, a Crown Corporation established under a Federal Statute¹ in 1966. The Commission has been supporting producer returns in two principal ways. Through an Offer-to-Purchase program for Creamery butter, Cheddar cheese and Skim powder, Manufacturing Plants have been enabled to pay producers year round approximately the equivalent to the support price for the major dairy products. Since manufacturers using milk in other dairy products compete for milk at the support level or higher, the product support does, in fact, establish a “floor” for the whole pricing structure of the Canadian Dairy Industry.²

In addition to this price support the Commission has been supplementing producer returns from the market by a direct payment. The accompanying table (Table 1) shows the price support levels for butter, Cheddar cheese and Skim powder, and the resulting support price target for industrial Milk.

Direct Payments and Subsidy Quotas

It will now be appropriate to return to the development of the quota system for industrial milk producers which evolved over five years from Subsidy Quotas to Market Share Quotas with each producer having a share of the domestic market for industrial milk. It began in 1967-68 when the Canadian Dairy Commission allotted an individual Subsidy Eligibility Quota to all producers of industrial milk and cream, equal to their deliveries during the previous year. This subsidy quota is still in effect today.

Every producer became registered with the Canadian Dairy Commission. Monthly shipments were reported by Plants on pre-printed lists supplied by the Commission and forwarded to Ottawa. A computer program

¹ Canadian Dairy Commission Act, 1966.

² V. McCormick: Dairy Price Support in Canada 1962-1972, Canadian Farm Economics, Vol. 7, No. 4, October 1972, p2-7.

accumulates each producer's shipments to date. The annual subsidy quota is divided into monthly percentages and the subsidy eligibility for the month to date is used to calculate the subsidy on shipments covered by quota. Eligible producers receive monthly subsidy cheques direct from the Commission.

The Subsidy Quota system was the first step towards supply management. It covered, initially, over eighty percent of the industrial milk and cream. The balance was excess fluid milk used in manufacturing which was not covered, except in provinces which operated fluid pools and admitted qualifying industrial milk producers to share in the fluid market. British Columbia was the first province to qualify for subsidy to fluid producers, and Ontario followed in 1968. Quebec started such a pool on November 1, 1972.

The subsidy quota was based on butterfat, the common denominator for milk and cream shippers. Butterfat production for manufacturing purposes has been close to the level of consumption in Canada and the direct payments to producers are only made on the quantity of industrial milk required from industrial milk and cream producers to supply the market (Table 2). At this level of butterfat production, however, the production of solid-non-fat in the form of skim powder exceeds the Canadian consumption by some 170-200 million pounds annually. Most developed countries with a substantial dairy industry are in the same position and ample

supplies enter the World market. In order to remain competitive, export aid is required in most years. The cost of exporting surplus products is charged against producers. The amount of the export charge is calculated from time to time based on production trends and competitive pricing in World markets. The total cost is pro-rated to individual producers as a "hold-back" rate per pound of butterfat shipped. The charge was made against producers' subsidy. Cream producers who utilize solids-non-fat on the farm were not charged for the export costs of skim powder.

As the returns from the market and the subsidy became more remunerative, many producers began to ship more milk than their subsidy quota. In an attempt to confine production to within domestic requirements, the Canadian Dairy Commission introduced an over-quota holdback at twice the rate of the in-quota holdback in 1969-70, and raised it to the level of the subsidy rate in 1970-71. This meant that a producer who did not acquire any additional subsidy to cover his production but over-produced, had a deduction made from his subsidy at the rate of \$1.25 per cwt (the over-quota holdback rate) for excess deliveries.

The progression in the charges for excess deliveries highlighted a weakness in the system as it then existed. Excess fluid milk which benefited from the price support program did not contribute to the cost of export and had to be financed by proportionately higher

TABLE 2 — SUBSIDY QUOTAS FOR INDUSTRIAL MILK AND CREAM, 1972/73

	Number of Quota Holders ^a	Subsidy Quota ^b	Shipments by Registered Producers in ^c 1971-72
	—Number—	—Million pounds butterfat—	—Million pounds butterfat—
P.E.I.	1,851	5.0	5.3
N.S.	513	0.9	0.9
N.B.	1,137	2.6	2.7
Quebec	29,130	147.0	156.4
Ontario	15,475	82.3	82.1
Manitoba	6,010	12.4	13.2
Sask.	8,226	9.5	11.7
Alta.	9,240	24.3	25.4
B.C.	131	0.2	0.2
Canada	71,713	284.1	298.1

^aRegistered Industrial Milk and Cream producers who hold a Subsidy Quota with the Canadian Dairy Commission. In addition to the Industrial Milk & Cream producers, Fluid producers in Pools in B.C., Ontario and Quebec hold subsidy quotas as follows: B.C. 556; in Ontario, 4,290; and in Quebec where the quota is just established the estimated number is 3,400.

^bSubsidy Quota of Registered Industrial Milk and Cream producers. Subsidy Quota held by Fluid Pool producers is (in million pounds butterfat) as follows: in B.C. 1.4; in Ontario 23.3; in Quebec it is estimated at 6.2.

^cShipments in the preceding year, 1971-72, by producers of Industrial Milk and Cream registered with the Canadian Dairy Commission.

TABLE 3 — MARKET SHARES

	Number of producers with market shares ^a	Market Shares according to standard formula 1969-70 ^b	Market Share Entitlement for 1972-73 ^c
	— Number —		— million pounds butterfat —
P.E.I.	2,042	6.5	7.0
(N.S.)	(1682)	(4.1)	
(N.B.)	(1925)	(4.5)	
Quebec	35,743	196.8	211.6
Ontario	24,894	148.8	160.0
Manitoba	9,126	18.1	19.5
Saskatchewan	16,260	14.7	15.8
Alberta	13,620	34.1	36.7
(B.C.)	(1721)	(11.4)	
Totals	107,013	439.0	450.6

^a Industrial Milk and Cream producers and Fluid producers

^b Market Sharing Quotas were calculated as the greater of 1969-70 deliveries and the Subsidy Quota, if any.

^c After increases of 7½ percent authorized for 1972/73

charges against subsidy entitlement of industrial producers.

Supply Management

The root cause of cyclical over-production in the industrial sector was the lack of a guide to the size of the market available to individual producers. This is so important because producers who intend to increase their basic capacity to produce must plan for several years in advance because of the time it takes to raise additional cows to the milking age. On the other hand, the marketing process for milk is quite different from other agricultural commodities as milk must be marketed every day or every other day of the year. This is where the need for price stability comes in.

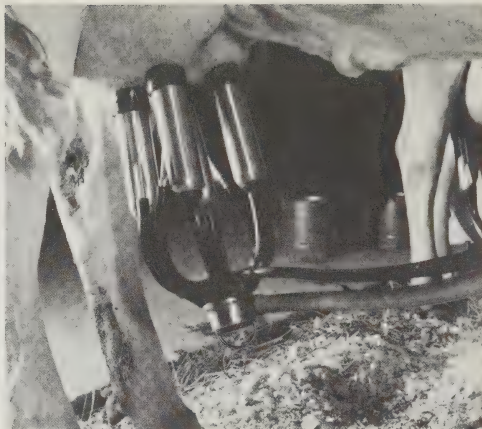
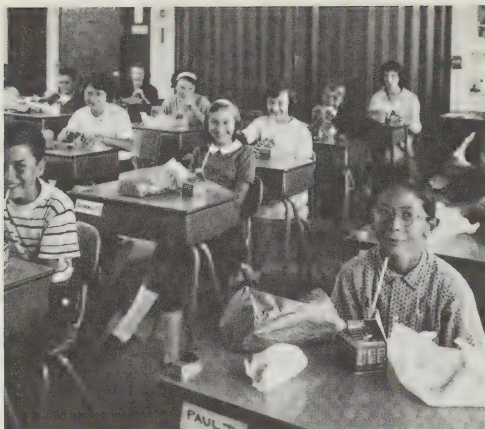
To deal with this situation, the "Dairy Farmers of Canada" developed a comprehensive and equitable Market Sharing program. All milk and cream used for manufacturing purposes whether shipped by fluid or industrial producers was covered by the program. It was designed to bring forth the amount of milk fat which can be marketed at the support level. The program was thoroughly discussed with provincial Governments and the producer groups concerned, and was instituted through the signing of an Agreement between the Canadian Dairy Commission and participating Agencies in the provinces. Ontario and Quebec entered the program in December 1970, and Prince Edward Island on the same date in 1971. Alberta joined on April 1, 1972, and Saskatchewan and Manitoba on July 1, 1972. Presently the program covers six provinces and 95 percent of the Canadian production of industrial milk

and cream. Nova Scotia, New Brunswick and British Columbia are giving the program consideration (Table 3).

The main provision of the Agreement is that the provincial Agencies allocate to producers individual Market Quotas and deduct a levy on deliveries within quota and in excess of quota from the Market price on behalf of the Commission, and remit these levies monthly to the Commission. The Commission, as a result made subsidy payments at the full rate without holdback and undertook to restore the subsidy quotas to the level existing at the beginning of the 1970-71 Dairy year in the participating provinces.

Managing the System

The Agreement also provides for a Canadian Milk Supply Management Committee with three representatives from each province; one representing the provincial Government Board or Commission, and two representing provincial producer Boards, and three representatives of the Canadian Dairy Commission, under the Chairmanship of a member of the Commission. Observers from the "Dairy Farmers of Canada" and participating Agencies attend the meetings as required. The Management Committee meets every two months and draws up the policies and guidelines for the administration of this National program by participating Agencies. The Management Committee has created a Secretariat of four from the staff of the Commission, and Agencies in Quebec, Ontario and the Prairie provinces to prepare research and background data on issues for consideration by the Management Committee.



A pre-requisite to establishing individual market quotas was the registration of producers with the Canadian Dairy Commission which facilitated the computation of Market quotas. The Commission made this information available to provincial Boards which allotted the market quotas to producers licenced by them. Fluid producers who were already licensed by provincial Boards also became registered with the Canadian Dairy Commission. Market quotas were allotted to them essentially for shipments in excess of those covered by fluid quotas.

Provincial Boards drew up procedures for quota transfer between producers. Under the Market Sharing Program, Market Quotas became freely negotiable between producers. A new provision was made so that the Canadian Dairy Commission would reallocate a Subsidy Quota of a vendor to a buyer upon written proof that the Market Quota had been transferred. This latter policy was a change from the previous one under which the subsidy quota was reallocated only if the herd was transferred.

The in-quota "levy" rate was set at the same rate as the "holdback" rate from subsidy, but the over-quota levy rate was set to reflect the value of milk solids in World markets. At times when the Commission's costs of export of a surplus are such that the full over-quota levy is not required, the rate is reduced to a minimum of \$1.50/cwt milk which is maintained as a basic dis-

couragement to producing without quota coverage. The immediate benefit to industrial producers who previously over-shipped their subsidy quota, was a reduction in the export charges. Their new Market Quotas covered their current level of production and as a result they paid the in-Market-Quota "levy" of \$0.26 cents (now 10¢) instead of the over-subsidy-quota "holdback" of \$1.25.

This reduction in export charges was possible because Market Quotas now included all shipments. Therefore the in-quota levies were collected on a larger quantity than before. There have been marked general improvements in producers' returns as well, which have more than compensated the producers who came into the program to contribute to export costs for the first time. (See Table 1).

It is significant that the increase in farmers' returns was, to a very substantial degree, dependent on a sounder market place. To many farmers price stability gained since the inception of Supply Management gave them the confidence to plan for the future in the same way fluid producers have for many years. "The Market is sounder because Supply Management aims at avoiding surplus production with low prices in cycle with short production and high prices. The Dairy Farmers of Canada have demonstrated a willingness and ability to determine their future as an aggressive and modern industry".

FARM BUSINESS ANALYSIS - ITS METHODS AND OBJECTIVES

Farm records describe the state of affairs of the farm business which can be evaluated by such economic analysis as CANFARM.

From the farmer's own data, the computerized CANFARM system generates a report composed of four statements:

- a) Assets and Liabilities*
- b) Income and Expenses*
- c) Analysis of Alternative Earning Opportunities*
- d) Analysis of Solvency and Profit Ratios.*



Leonard Bauer*

It is the purpose of farm records to describe the state of affairs of the farm business. It is the purpose of analysis to evaluate this state of affairs, that is to identify and define the problems. Evaluation implies that there is some standard of performance against which the farm business is to be judged. The ultimate judgement of the degree of success or failure rests upon whether the objectives set by the decision maker¹ have been attained.

In economic theory the farmer's goal, i.e. his prime standard of achievement, is taken to be maximum profit which, in practical application, is measured by net farm income, labour earnings or return to capital. Traditional farm management efficiency ratios have been designed to detect reasons why actual profit is less than maximum. In recent years efforts have been made to pinpoint the divergence on an enterprise basis. Recently, economists have gained the knowledge and techniques whereby the objective of maximum profit can be modified, especially in the area of risk preferences.

This article describes the background and guidelines upon which economic analysis of farm records is based. It is these guidelines which were used to arrive at the Canadian Farm Management Data System.

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¹ Objectives are not always, perhaps not even often clearly set out at the start of the decision process and are continually revised through time.

STANDARDS OF ACHIEVEMENT

In practice, standards of achievement can be derived from a number of sources. The four following sources should not be taken as a complete listing. Furthermore, a systematic and comprehensive analysis might draw on each of these to isolate problem areas.

"THUMB RULE" STANDARDS

"Thumb Rules" are acceptable rates of efficiency that are frequently expressed as ratios of output to input.

Suppose a farmer's record summary revealed that he earned \$5,000 last year. This is simply a statement of fact² and by itself, is neither good nor bad. Suppose further that he has other non-farm opportunities and had he followed the best of these he would have earned \$10,000. This still may or may not indicate a problem depending upon the monetary and non-monetary adjustments³ that he may wish to make to the figures. Farmers, and those who counsel them, have gained knowledge through experience about such factors as feed efficiencies, crop yields and milk production. From this familiarity with their production processes, they have established a general feeling of what is an acceptable rate of achievement and what is not.

² Subject, of course, to errors of measurement both empirical and conceptual.

³ Non-monetary adjustments may involve among others such factors as not wanting to put up with the hustle and bustle of city life.

In general "Thumb Rules" are acceptable rates of efficiency and are frequently expressed as ratios of output to input. Miles per gallon, bushels of wheat per acre, and percent return to capital are familiar examples. In calculating and presenting ratios of efficiency one must keep in mind a basic law of production economics, namely the *law of diminishing returns*, and not argue that higher rates of accomplishment are necessarily preferable to lower ones. The dictum of economic theory is to produce where the *Value of the Marginal Product* is equal to *Marginal Factor Cost*. Unfortunately the ratio locates only one point on the production function⁴ and gives no information about the slope of the surface. Consequently there is no direct way of knowing from the ratios whether inputs should be increased or reduced in order to achieve the optimum.⁵

Actual levels of performance can be calculated from the farmer's record summaries and then left to him to compare his performance against what he thinks it "ought to be" in the light of his own experience or the recommendation of others. The farmer is left with his intuitive feeling based on his "Thumb Rule" knowledge as to whether, how, and by how much input levels should be altered.⁶

Group Average Standards

In comparing his performance to a group average, a farmer may be encouraged to examine his business more closely, may become frustrated by his situation or may be lulled into complacency.

Performance may also be evaluated by comparison to neighbouring farms as reflected through group averages. This is what is generally meant by the term "Comparative Analysis". Suppose, in the example farmer's group, the average earning was \$8,000. This too is merely a statement of fact and does not indicate the existence or absence of a problem. Group averages undoubtedly exert some influence on a farmer's goals. Just how a particular

farmer will react depends upon many factors. If a farmer earned less than comparable farmers, he might be encouraged to examine his business more closely; or he may take his performance as an indication of failure and be frustrated into the position of doing nothing. On the other hand, he may have shown up "better than average" and be lulled into a feeling of complacency even though attractive but unexplored opportunities exist.

If group averages are presented with the proper interpretation they can be of use in revising farmers notions about particular thumb rules. For example, in the light of what other farmers are doing, a 12:1 feed conversion for hogs may not look too good anymore.

Unfortunately, the problem of knowing the slope of the production surface is not solved by combining individual observations into an average. Additional pitfalls arise in making comparisons to groups. Although one might assume farms in the group to be similar as far as size, farm type and geographic location are concerned, they are not different observations on the same production function but are observations on different production functions. It may be more useful for an individual to make comparisons to other individuals following the same production process or to contrast his operation with individuals pursuing different processes than it is to examine the average of a group of individuals who are following some mixture of similar and different processes.

Furthermore, simple group averages do not separate those factors within the farmers control from those about which he can do nothing. This problem can be partially overcome by calculating measures of dispersion as well as the average. Of course, if all observations were from the same population, deviations from the average would be a measure of random error and might yield some information about uncontrollable factors. However, to simply present the standard deviation in the case of a mixture of similar and dissimilar farms adds little new information unless something is also said about differences between farms at the low and the high end of the distribution.

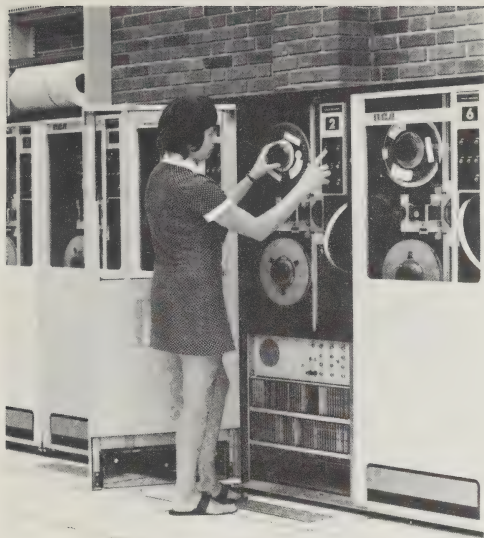
Bench Mark Standards

Physical and economic research, especially that conducted in an interdisciplinary environment may give clearer insight to "what is possible" than can be derived from comparing or contrasting to other farms or contemplating one's own situation. Crop and livestock yields and machinery i.e. labour relationships are cases in point. *Adequately specified production functions can come only from looking at the underlying causal*

⁴ There are those who would argue that he may not even be on his production function but rather interior to it. This may arise because he is not applying inputs in the most effective manner or at the right time. If such is the case, movement to the surface will always constitute an improvement in efficiency because for every point interior to the production function there is a point on the production surface achieving greater output for the same input. Whether one should move out to the surface depends upon the added costs and returns associated with the move.

⁵ At the same time it must be remembered that although the ratio is derived from an observation taken at a single point in time it is an observation from a probability distribution. The ratio may very well be what it is because of random fluctuations in price and/or yield essentially beyond the operator's control.

⁶ He may test the expected consequence of altering input levels through budgeting or other projecting techniques.



relationships of various production processes and examining their impact upon the total farm business. This involves technical questions, the answers to which come from the experimentation of physical scientists. Because of the inference to be drawn from the results, this experimentation is not confined entirely to the laboratory or the experiment station. In some instances it may need to be conducted on the farm to take into account relevant variables which are only found in an actual farm situation. Bench marks derived in this interdisciplinary approach can serve as comparative standards useful in detecting problems and identifying opportunities for improvement on individual farms.

Optimal Planned Standards

One of the main objectives of analysis is to provide reasons why anticipated outcomes were not achieved. The use of (a) thumb rules; (b) group averages; and (c) bench marks, tend to be a piecemeal approach. More information could be derived from comparing the business as it exists today against how it would appear if optimally organized. Optimal organization implies the use of farm planning techniques ranging from partial budgets through mathematical programming and systems simulation. *The objectives of the farmer, his resource base and input-output coefficients specific to his managerial capacity become important data requirements.* Group averages and the results of controlled experimentation can serve to supplement an individual's data. This approach eliminates one of the chief short-

comings of the so-called comparative approach; namely of not knowing whether to increase or decrease specific input levels in order to move towards optimality.

CANFARM'S FARM BUSINESS ANALYSIS SYSTEM

With CANFARM a farmer can choose the group with which he wants his enterprise to be compared to.

In the spring of 1972, CANFARM had an operational farm business analysis system. Basically this system, operating on 1971 data, was used for calculating a variety of efficiency ratios for an individual farm and for comparing that farm to groups of farms. Thus far about 2,500 farm business analysis reports have been produced. The data contained in these reports are taken entirely from that submitted by the farmer into the Farm Record System.

Report Content

The system generates a report composed of four statements -

- a) a Statement of Assets and Liabilities (see Figure 1),
- b) A Statement of Income and Expenses (see Figure 2),
- c) an Analysis of Alternative Earning Opportunities (see Figure 3), and
- d) an Analysis of Solvency and Profit Ratios (see Figure 4).

Each of these statements contains the farmer's own data on the right hand side and group average data on the left. The statements of *Assets and Liabilities* and *Income and Expenses* are reproduced in an almost identical format to that followed in the Farm Record System and serve as a back-up for the efficiency measures found in the two analytical statements.

Comparative Group Composition

Any farmer who received Annual Reports from the Farm Record System is eligible to receive Farm Business Analysis Reports. His Contact Agent is the person who requests that the report be produced. Two methods are available to the Contact Agent in specifying the composition of the comparative group.

He may request that the group consist of farms meeting certain criteria. For instance he may indicate that the group is to be composed of *all dairy farms having an investment between \$75,000 and \$99,999 located in Brant County, Ontario.* Or he may wish to compare to a group composed of *all grain farms having a volume of \$25,000 to \$49,999 of production located on Dark Brown Soils in Alberta.* He makes these kinds of requests by completing the CANFARM Analysis Request form

CANADIAN FARM MANAGEMENT DATA SYSTEM - SYSTÈME CANADIEN DE GESTION AGRICOLE									
CANTFARM		SUBJECT		STATEMENT OF ASSETS AND LIABILITIES		JONES, BILL C.		PAGE	
0107 0088	0122 0175	0107 0088	0122 0175	0107 0088	0122 0175	0107 0088	0122 0175	0107 0088	0122 0175
BEG YR	END YR	CHANGE	END YR	% CHANGE	ITEM	BEG YR	END YR	% CHANGE	
1971	1972	1973	1974	1975		1971	1972	1973	1974
GROUP AVERAGE									
2,969	2,128	-741	2,128	-25.1	CASH	11,562	12,904	+10.5	
0	0	0	0	0	ACCOUNTS RECEIVABLE	+1,343	0	-100.0	
46,266	48,686	+2,420	48,686	+5.2	CROPS	-500	0	-100.0	
31,850	43,650	+11,800	43,650	+37.1	LIVESTOCK	17,659	17,659	+0.0	
0	0	0	0	0	LIVESTOCK PRODUCTS	+7,326	50,120	+72.3	
0	0	0	0	0	SUPPLIES	-1,185	0	-100.0	
0	0	0	0	0		0	0	+0.0	
81,085	94,564	+13,479	94,564	+16.6	OPERATORS CURRENT ASSETS	0	0	+0.0	
123,500	132,000	+8,500	132,000	+6.9	REAL ESTATE	87,447	80,813	-7.6	
34,300	34,300	0	34,300	0.0	MACHINERY	35,000	90,100	+59.9	
157,800	163,800	+6,000	163,800	+3.8	OPERATORS FIXED ASSETS	+4,351	36,191	+13.3	
0	0	0	0	0	OTHER ASSETS	117,600	126,191	+8.0	
238,885	258,364	+19,479	258,364	+8.2	OPERATORS FARM ASSETS	0	0	+0.0	
49,390	35,000	-14,390	35,000	-29.1	LESS: OPERATOR LIABILITIES	+2,717	207,764	+1.3	
189,495	223,364	+33,869	223,364	+17.9	OPERATORS FARM EQUITY	-3,056	79,620	-3.7	
0	0	0	0	0.0	PERSONAL ASSETS	+5,773	128,144	+4.7	
0	0	0	0	0.0	LESS: PERSONAL LIABILITIES	+5,600	13,600	+70.0	
0	0	0	0	0.0	PERSONAL EQUITY	-123	0	-100.0	
0	0	0	0	0.0	NON-FARM BUSINESS ASSETS	7,877	13,600	+73.3	
0	0	0	0	0.0	LESS: NON-FARM BUSINESS LIABILITIES	0	0	+0.0	
0	0	0	0	0.0	NON-FARM BUSINESS EQUITY	0	0	+0.0	
189,495	223,364	+33,869	223,364	+17.9	OPERATORS NET WORTH	0	0	+0.0	
0	0	0	0	0.0	LANDLORD CROPS	130,148	141,744	+8.7	
0	0	0	0	0.0	LANDLORD LIVESTOCK	0	0	+0.0	
0	0	0	0	0.0	LANDLORD LIVESTOCK PRODUCTS	0	0	+0.0	
0	0	0	0	0.0	LANDLORD SUPPLIES	0	0	+0.0	
10,000	10,000	0	10,000	0.0	OTHER LANDLORD ASSETS	0	20,000	+0.0	
10,000	10,000	0	10,000	0.0	LANDLORD FARM ASSETS	0	20,000	+0.0	
238,885	258,364	+19,479	258,364	+8.2	PLUS: OPERATORS FARM ASSETS	20,000	20,000	+0.0	
248,885	268,364	+19,479	268,364	+7.8	TOTAL FARM ASSETS	205,107	207,764	+1.3	
						225,107	227,764	+1.2	

FIGURE 1

STATEMENT OF INCOME AND EXPENSES

SUBJECT:
SUJET

MONTHS: MONTHS

YEAR: 1971

PAGE: 2

GROUP AVERAGE	ITEM	YOUR FARM
18,465	CROP SALES	13,926
43,597	LIVESTOCK SALES	80,586
0	LIVESTOCK PRODUCT SALES	0
3,212	MISCELLANEOUS SALES	4,215
65,274	TOTAL CURRENT FARM SALES	98,726
603	PLUS: FARM PRODUCE USED IN HOME	350
0	PLUS: CROP INVENTORY CHANGE	+ 4,515
12,470	PLUS: LIVESTOCK INVENTORY CHANGE	-14,850
78,347	PLUS: LIVESTOCK PRODUCT INVENTORY CHANGE	0
	GROSS FARM INCOME	88,741
0	LESS: HOME PRODUCE USED IN FARM	0
1,725	LESS: CROPS PURCHASED	2,076
5,843	LESS: LIVESTOCK PURCHASED	31,396
0	LESS: LIVESTOCK PRODUCTS PURCHASED	0
70,779	VALUE OF FARM PRODUCTION	55,269
21,228	LESS: SUPPLY AND SERVICES PURCHASED	19,456
4,328	LESS: LABOUR	5,970
0	PLUS: SUPPLY INVENTORY CHANGE	+ 2,859
0	LESS: SUPPLY AND SERVICE PROVIDED BY HOME	1,235
0	PLUS: SUPPLY AND SERVICE USED BY HOME	1,149
0	LESS: LANDLORD SHARE OF NET INCOME	0
45,223	GROSS MARGIN	33,616
2,450	LESS: INTEREST ON FARM LIABILITIES	6,980
3,075	LESS: OTHER FIXED PURCHASES	755
6,851	LESS: DEPRECIATION	12,672
32,847	NET FARM INCOME	13,208

FIGURE 2

CANADIAN FARM MANAGEMENT DATA SYSTEM SYSTEME CANADIEN DE GESTION AGRICOLE			
CAN FARM		SUBJECT	
0005 0008		1971 3	
0011 0015		1971 3	
NAME: JONES, BILL C.		1971 3	
123467		1971 3	
CAPITAL AND INCOME ANALYSIS (ALTERNATIVE EARNING OPPORTUNITIES)		YOUR FARM	
GROUP	AVERAGE	ITEM	
	32,847	NET FARM INCOME	
	15,689	LESS: INTEREST ON OPERATORS FARM EQUITY	
	17,158	FAMILY LABOUR EARNINGS	
	0	VALUE OF UNPAID FAMILY LABOUR	
	17,158	OPERATORS LABOUR EARNINGS	
	32,847	NET FARM INCOME	
	0	LESS: VALUE OF UNPAID FAMILY LABOUR	
	12,500	VALUE OF OPERATORS LABOUR	
	20,347	RETURN ON OPERATORS FARM EQUITY	
	2,450	PLUS: INTEREST PAID ON OPERATORS FARM LIABILITIES	
	22,797	RETURN ON OPERATORS FARM ASSETS	
	7.6%	ALTERNATIVE EARNING INTEREST RATE	
		7.0%	

CAPITAL AND INCOME ANALYSIS (SOLVENCY AND PROFIT RATIOS)		YOUR FARM	
GROUP AVERAGE	\$ 5.89	SOLVENCY RATIOS (YEAR END)	
	\$ 5.89	\$ FARM ASSETS/\$ FARM LIABILITIES	
		\$ TOTAL ASSETS/\$ TOTAL LIABILITIES	
		\$ 2.61	
		\$ 2.78	
		EARNING RATIOS	
		CAPITAL TURNOVER OF	
		-OPERATORS FARM ASSETS	
	3.51 YRS	3.74 YRS	
	3.65 YRS	4.10 YRS	
	9.86	3.76	
		% RETURN ON OPERATORS FARM EQUITY	
	9.17	5.66	
	32.20	21.15	
	63.89	60.82	
		\$ GROSS MARGIN/\$100 OF VALUE OF PRODUCTION	
		GROWTH RATIOS	
		% CHANGE IN CURRENT ASSETS	
	+16.62	- 7.59	
	+ 3.80	+ 7.95	
	+ 8.15	+ 1.33	
	-29.14	- 3.70	
	+17.87	+ 4.72	
	+17.87	+ 8.83	
		COST RATIOS	
		VARIABLE COST AS % OF TOTAL COST	
	38.65	36.50	
	61.35	63.50	
		FIXED COST AND OPP COST AS % OF TOTAL COST	
		VARIABLE COST AS % OF VALUE OF PRODUCTION	
	36.11	39.18	
	57.31	68.17	
	93.42	107.35	
		TOTAL COST AND OPP COST AS % OF VAL. OF PROD.	
		BREAK EVEN POINTS	
		DOLLAR VALUE OF PRODUCTION REQUIRED TO	
	\$19,1371	COVER VARIABLE COSTS, INTEREST PAID,	
	\$43,927	DEPRECIATION AND OTHER FIXED PURCHASES	
	\$63,492	\$33,555	
		\$47,530	
		- AND UNPAID FAMILY AND OPERATORS LABOUR	
		\$61,947	
		- INTEREST ON OPERATORS FARM EQUITY	

FIGURE 4

FARM BUSINESS ANALYSIS SYSTEM - FARM CHARACTERISTICS FORM

SYSTEME D'ANALYSE DE L'ENTREPRISE AGRICOLE - CARACTERISTIQUES DE L'ENTREPRISE

FARMER'S NAME
NOM DE L'EXPLOITANT

BILL C. Jones

FARM-ID
FERME-ID

123467

3 8

608

9 11

GEOGRAPHIC LOCATION
EMPLACEMENT GEOGRAPHIQUE

2

12

ENTERPRISE STRUCTURE
DEGRE DE SPECIALITE

3223

13 16

PRIMARY ENTERPRISE
ACTIVITE PRINCIPALE

1112

17 20

SECONDARY ENTERPRISE
ACTIVITE SECONDAIRE

59002

21 25

FARMER CONTACT NO.
NO. DU CONSEILLER

POUR CANFARM SEULEMENT
CANFARM USE ONLY

CONTACT FILE	FARM INDEX		FARM FILE
	NAME	I.D.	

Date: MARCH 31, 1972

FARMER CONTACT
Name: H. KIMBLE

CONSEILLER
Nom:

AGRICOLE Address: BOX 512

Adresse: ANYWHERE, ONT

Comments:
Commentaires:



CANFARM OFFICE COPY
COPIE A CANFARM

FIGURE 5

FARMER CONTACT	Date	APRIL 15, 1972
	Name	H. KIMBLE
	Address	Box 512, ANYUNTERS, OH.

1	9	6	9	5	6	5	9	0	0	2	4
3		8				9		13		14	
REQUEST #						CONTACT #				REQUEST TYPE -3	

[illegible]

15

4	0	0	1	2	3	4	6	7	8	0	1	2	3	4	6	7	8	0	2	1	2	3	4	6	7	8	0	3	1	2	3	4	7	0	8	0	4	1	2	3	4	7	1	0	5	1	2	3	4	7	2	0	6	1	2	3	4	7	3	0	7	1	2	3	4	7	4	0	8	1	2	3	4	7	5	0	9	1	2	3	4	7	6	1	0	1	2	3	4	7	7	1	1	1	2	3	4	7	8	1	2	1	2	3	4	7	9	1	3	1	2	3	4	7	0	1	4	1	2	3	4	7	1	5	1	2	3	4	7	2	1	6	1	2	3	4	7	3	1	7	1	2	3	4	7	4	1	8	1	2	3	4	7	5	1	9	1	2	3	4	7	6	1	0	1	2	3	4	7	7	1	1	1	2	3	4	7	8	1	2	1	2	3	4	7	9	1	3	1	2	3	4	7	0	1	4	1	2	3	4	7	1	5	1	2	3	4	7	2	1	6	1	2	3	4	7	3	1	7	1	2	3	4	7	4	1	8	1	2	3	4	7	5	1	9	1	2	3	4	7	6	1	0	1	2	3	4	7	7	1	1	1	2	3	4	7	8	1	2	1	2	3	4	7	9	1	3	1	2	3	4	7	0	1	4	1	2	3	4	7	1	5	1	2	3	4	7	2	1	6	1	2	3	4	7	3	1	7	1	2	3	4	7	4	1	8	1	2	3	4	7	5	1	9	1	2	3	4	7	6	1	0	1	2	3	4	7	7	1	1	1	2	3	4	7	8	1	2	1	2	3	4	7	9	1	3	1	2	3	4	7	0	1	4	1	2	3	4	7	1	5	1	2	3	4	7	2	1	6	1	2	3	4	7	3	1	7	1	2	3	4	7	4	1	8	1	2	3	4	7	5	1	9	1	2	3	4	7	6	1	0	1	2	3	4	7	7	1	1	1	2	3	4	7	8	1	2	1	2	3	4	7	9	1	3	1	2	3	4	7	0	1	4	1	2	3	4	7	1	5	1	2	3	4	7	2	1	6	1	2	3	4	7	3	1	7	1	2	3	4	7	4	1	8	1	2	3	4	7	5	1	9	1	2	3	4	7	6	1	0	1	2	3	4	7	7	1	1	1	2	3	4	7	8	1	2	1	2	3	4	7	9	1	3	1	2	3	4	7	0	1	4	1	2	3	4	7	1	5	1	2	3	4	7	2	1	6	1	2	3	4	7	3	1	7	1	2	3	4	7	4	1	8	1	2	3	4	7	5	1	9	1	2	3	4	7	6	1	0	1	2	3	4	7	7	1	1	1	2	3	4	7	8	1	2	1	2	3	4	7	9	1	3	1	2	3	4	7	0	1	4	1	2	3	4	7	1	5	1	2	3	4	7	2	1	6	1	2	3	4	7	3	1	7	1	2	3	4	7	4	1	8	1	2	3	4	7	5	1	9	1	2	3	4	7	6	1	0	1	2	3	4	7	7	1	1	1	2	3	4	7	8	1	2	1	2	3	4	7	9	1	3	1	2	3	4	7	0	1	4	1	2	3	4	7	1	5	1	2	
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ME 153 (172)

FARMER CONTACT	Date	APRIL 17, 1972
	Name	H. KIMBLE
	Address	BOX 512, ANYWHERE, ONT.

050534	59002	2
3 8	9 13	14
REQUEST #	CONTACT #	REQUEST TYPE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349
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[illegible]

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shown as Figure 5. To facilitate this method, every farmer who has received annual reports from the Farm Record System and who has, in the opinion of his Contact Agent, a reasonably accurate set of records is given a set of descriptive characteristic codes. This is done by the Contact Agent completing the Farm Characteristics form (see Figure 6). Every farmer thus coded becomes a member of the group when his codes satisfy the conditions specified in the request.

The alternative methods of making requests is to indicate the identification numbers of the farms to be

included in the group. This kind of request is done by using the CANFARM Analysis Request form shown in Figure 7. Using either method of requesting reports, the comparative group must contain five or more members to respect the confidentiality of the farmers involved.

Future developments in the Farm Business Analysis System will be to make enterprise analysis available as well as total farm analysis. Also, as more data is collected over a period of years it will become possible to make comparisons not only to groups of similar farms but also comparison to performance in previous years.

AGRICULTURAL EXCHANGES IN THE UNITED STATES

A LITTLE PUBLICIZED "ORDERLY MARKETING" ORGANIZATIONAL TOOL

The exchange is a voluntary master sales organization with a system of tightly controlled sales agency contracts.



Thomas A. Bennett *

INTRODUCTION

Agricultural marketing has long been characterized by a multitude of small producers selling to a few buyers. Although the number of producers in Canada and the United States has progressively diminished, the number of buyers has diminished also. The largest percentage of fresh fruits and vegetables, for example, are sold through large chain stores with perhaps one buyer purchasing the requirements for an entire chain. Such large scale buying requires volume selling. Under such circumstances individual producers are increasingly at a disadvantage in not only obtaining a market for their output but also in influencing the price received for their product.

To obtain greater marketing power, agricultural producers have, over the years, developed and tried various organizational tools. Most of those developed in the U.S. have been of a voluntary nature, while those in Canada have tended to be more of a compulsory nature.

Much recognition and publicity have been given in Canada to Marketing Boards and agencies and in the United States, to cooperatives and to Marketing Orders

and Agreements. Very few producers or commodity groups in Canada or in the U.S. are aware of the existence or operation of Agricultural or Marketing "Exchanges".

However, a great deal of interest has been generated recently in certain small areas of the U.S., in exchanges. Many growers, especially of fresh fruit and vegetables, are convinced that this tool may be an answer to their prayers.

The exchange concept is not new. It has been tried, with varying degrees of success, in several areas of the U.S. Currently there are ten exchanges - seven in Florida and three in other states (Table 1). One, the Florida Sweet Corn Exchange, has been in operation for over 12 years. There are several other exchanges presently in the planning and formation stages.

STRUCTURE

Basically, the "exchange" is a voluntary master sales organization with a system of tightly controlled sales agency contracts. It is organized under the U.S. cooperative legislation and may operate either as a special arm of an established bargaining cooperative, such as the California Asparagus Exchange, or as an independent entity, such as the Florida Sweet Corn Exchange.

Two legal instruments are utilized: (1) a uniform marketing contract and (2) a handler contract. The

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TABLE 1 — MARKETING EXCHANGES IN OPERATION, JULY 1, 1972.

Florida

Zellwood Sweet Corn Exchange
 Southern Florida Vegetable Exchange
 (Pole Beans)
 Northern Florida Growers Exchange
 (Potatoes)
 Flower Exchange
 Citrus Exchange
 Florida Celery Exchange
 Florida Sweet Corn Exchange

California

California Asparagus Exchange
 California Potato Exchange

Washington

Flower Exchange

uniform marketing contract, varies somewhat by area. Basically, the contract designates the exchange as the growers' exclusive sales agent for the purpose of negotiating terms and conditions for marketing the product. In essence, the uniform marketing contract passes complete control and title of the product from the producer to the exchange.

The *handler contract* authorizes a shipping firm, or handler, to act as an authorized sales agent for the Exchange. Under provisions of the California Asparagus Exchange contract, the handler agrees to handle only the produce of grower/members of the exchange, to comply with minimum prices established by the marketing committee of the exchange, and to comply with the rules and instructions of the Exchange. The Florida Sweet Corn Exchange handler contract differs only in that handlers are not required to handle members-only produce.

MEMBERSHIP

Only growers may be members of the exchange. If a handler is also a grower, he must execute both a grower contract and a handler contract. A grower must also be a member of the parent cooperative association if the exchange is organized as an arm of such an association.

OPERATION

The overall operation of the Exchange is generally under the direction of an executive committee with day-to-day details handled by a marketing committee. The marketing committee is composed of a varying number of growers and/or contracted handlers. The committee meets frequently as the need arises - perhaps daily or twice per day - by closed circuit telephone. The committee members receive the advice and counsel of the exchange manager, growers and contracted handlers. During the meeting the committee members discuss the current marketing conditions and determine the immediate marketing strategies - the amount of product to be shipped and some form of price. Before becoming

final, any decision by the Committee must be approved by the grower/members or the Board of Directors.

POSSIBLE FUNCTIONS OF AN EXCHANGE

The exchange may add to the orderly marketing of a product directly or indirectly by:

- 1) Establishing a price.
- 2) Establishing Harvesting holidays. (No harvest).
- 3) Regulating the amount shipped. (Flow-to-market).
- 4) Regulating the grades.
- 5) Controlling the use of containers.
- 6) Promoting and merchandising the product.
- 7) Developing production and marketing information.
- 8) Taking any constructive action which will best promote the interests of its members and the industry.

TYPES OF PRICES

The marketing committee of an exchange may develop various types of prices dependent upon current marketing conditions. These include:

- 1) A minimum price.
- 2) A price range.
- 3) A selling price.
- 4) A recommended price.
- 5) No price.

MARKETING EXCHANGES VS MARKETING BOARDS

The marketing exchange differs considerably from marketing boards. Most significantly, participation in a marketing exchange is entirely voluntary while participation in a marketing board is compulsory. Marketing exchanges require no producer vote to become established as do marketing boards and their marketing plans. Therefore, they are also more flexible in their operation. However, a very strong voluntary commitment by producers is necessary to establish an exchange. While to continue effective operation, aggressive membership maintenance is essential.

As with any type of cooperative, this approach to marketing has its greatest weakness in its voluntary nature. There are producers who will remain outside the exchange either because of apathy or because they feel they can have the best of two worlds. They can use the exchange activities as a "price umbrella" without contributing to the effort while at the same time they can be flexible and undersell the exchange when advantageous to do so.

Although the exchanges have worked well on a completely voluntary basis, they have had greater effectiveness when operated in association with a Federal Marketing Order. Participation in a U.S. Federal Marketing Order is compulsory. Although the two are not directly related, producers apparently are more inclined to participate in the marketing exchange. In such a complementary relationship, the marketing exchange approaches the degree of producer participation of Canadian Marketing Boards.

EXAMPLES OF OPERATING EXCHANGES

Florida Sweet Corn Exchange - Belle Glade, Florida

The Exchange was organized in 1960 as a cooperative under Chapter 618 of the Florida Statutes. The organization may establish on a voluntary basis, grades and standards, wage rates, prices, quantities, and may conduct advertising and perform various other functions.

An initial signup fee, based upon acreage, was required of producer/members when the exchange was organized. An assessment of 4¢ per crate is made on all sweet corn sold. As soon as a sufficient amount of capital was accumulated, the initial membership fee was refunded. The Exchange is currently funded only by the per crate assessment.

The Marketing Committee of the Exchange is composed of three contract handlers who are agents of the Exchange. The committee meets with the organization management by phone every Monday and Wednesday, or as the need dictates, and determines current prices and strategies.

Several different types of prices and strategies may be decided upon by the committee. These include a minimum price, a price range, a selling price, a recommended price, or no price. Usually, however, the committee sets the price. As the ultimate goal is to stabilize the market, handlers are not permitted to sell over or under the selling price when it is established. In addition to setting price, the Exchange can regulate the

"flow-to-market". A "marketing holiday" may also be called by the committee during which none of the crop or only a percentage of the crop may be harvested.

The Exchange has several provisions for special circumstances. There is a special Exemption Committee composed of one grower, one member of the marketing committee and one Federal/State Inspector to review requests for exemption from grade and price specifications. If marketing conditions warrant, an exemption may be given. A provision is made for those handlers wishing to "fill-in" loads or needing "mixers". One packing house is permitted to sell to another at a 10¢ per crate discount.

Management of the Exchange is contracted for with the Florida Fruit and Vegetable Association. In addition to the Manager, there is one full-time and one half-time fieldman and two full-time secretaries.

The Exchange was originally operated in conjunction with a State Marketing Order that was voted out in 1971. Currently, grower participation is about 60 percent as opposed to nearly 100 percent when the marketing order was in effect. During the period that the Marketing Order was in effect, every grower was required to participate in its program. As the Exchange program and the Marketing Order program were closely related and operated together, the growers participated in each. When the Order was voted out grower apathy slightly reduced Exchange participation. However, the exchange is still very effective in the opinion of grower members.

Florida Celery Exchange

The Florida Celery Exchange basically covers the entire state and has 100 percent participation - 40 to 50 growers plus 12 handlers. The Exchange operates in conjunction with both a State and a Federal Marketing Order.

The organization is similar to the Florida Sweet Corn Exchange. The Marketing Committee of the Exchange, however, consists of five handlers who are contracted agents of the Exchange. The Exchange, headquartered in Orlando, has a full-time Manager and about 14 employees. In addition to price and volume control, the Exchange collects and disseminates data.

California Asparagus Exchange

The California Asparagus Exchange was organized in early 1971 as a special arm of the 50-year old California

Asparagus Growers Association. The Exchange program deals with the marketing of fresh asparagus and closely parallels the bargaining activities of the Marketing Committee of the Association which deals with asparagus for processing. The program is operative in the Delta region of California. In 1971, participation in the Exchange included about 50 percent of the producers and 50 percent of the handlers in the region. In 1972 participation, reportedly, increased to over 90 percent of the producers (basically all but the production of two large integrated processor/producers - Fresh-Pict and Del Monte) and 100 percent of the handlers.

To facilitate daily operations, the Exchange Manager has a closed circuit telephone system with an extension to each handler and grower member of the Marketing Committee of the Exchange. The Marketing Committee of the Exchange is composed of all of the contract handlers and four growers. The Manager sets up a meeting by pushing a button on his phone. A quorum is considered to be all who answer. Each committee member responds by announcing his name. The Manager then asks for reports on shipments, receipts, and conditions of supply and demand.

Current price recommendations are made by the handlers, who are agents of the Exchange, and by grower members of the committee. Grower members, then, agree on a floor price for the current period. A decision may also be made by the grower members on diversion of a part or all of the preceding day's harvest to alternative outlets - usually to processors.

Membership dues are 5¢ per crate, handler charges are 70¢ per crate - 45¢ for handler expenses and 25¢ for handler profit - and 25¢ per crate goes to a contingency pool to cover claims, brokerage fees, and other expenses. Unused funds in the contingency pool are returned *pro-rata* to the growers.

LEGAL STATUS

In the U.S. there is a lingering question as to the legality of exchange operations especially in respect to price fixing and restraint of trade. However, to date, no serious contentions on the legality of the exchange concept have been voiced. The exchanges in Florida have been in operation for many years. When first organized, the legality of the exchanges was scrutinized by the Federal Trade Commission and no objection was raised. Attorneys in California and the state of Washington have examined the structure and operating procedure of the exchanges and, reportedly, see no basis for branding them illegal. Soon after the California Asparagus

Exchange was formed, two attorneys from the FTC, reportedly reviewed the structure and operational procedures of the organization. They could see no area of contention and did not question its legality.

According to proponents of the exchange concept in Florida, it is perfectly legal in essence because there is only one owner of the crop - the exchange - and it contracts the marketing of the crop to handlers. The contracted handlers meet with management or representatives of the Exchange and determine a realistic selling price for the product in concurrence with the exchange.

According to proponents of the exchange concept in California, it is perfectly legal as long as the decisions are in the hands of growers. Only growers are members of the exchange with contracted handlers having only an advisory role. The *Case-Swayne Company, Inc. vs Sunkist Growers, Inc.*, decision is often quoted as the basis for statements supporting the legality of the Exchange concept.

Although there is a slight difference between the structures in California and Florida, both have evidently been determined to be legal.

EFFECTIVENESS

It is the claim of the members of the various exchanges and some of the handlers that the market, on the buyers end, has been stabilized. Participants in the trade, theoretically, do not have to worry about being underpriced.

Some proponents theorize that an exchange can effectively remove imperfect and predatory competition in an industry regardless of supply and demand forces. It is also felt, by experienced agricultural observers, that farmers and handlers will go along with an exchange more readily than with a marketing order. It is also much easier to establish an exchange than a marketing order or a marketing board.

The exchanges in Florida have proven to be effective. Spokesmen for the relatively new Asparagus Exchange in California state that the effects of their program have been tremendous. Participants in 1971 did very well. In 1972, those participating in the program had one of the best years even in spite of very difficult marketing circumstances. Those not in the program, reportedly, had a very bad year.

The exchanges in some areas have been successful in practically eliminating one great problem of the fresh produce business - consignment sales. Most sales are now

made on an f.o.b. basis with tight limitations on consignment selling.

Although exchanges are not permitted to control acreage planted they can, and do, regulate the "flow-to-market". Through careful planning and tight daily control the amount of the product sold during a given period can be regulated. Their success, however, is dependent upon voluntary participation and this may be the greatest weakness.

CONCLUSION

The exchange concept has a great deal of merit as another "tool" in the producers kit. For fresh market organization in the U.S., it may have even greater potential as a complimentary tool when combined with a marketing order. For the Canadian situation, the marketing exchange operations have several features that might be adopted by commodity marketing boards, agencies or other marketing groups.

POLICY AND PROGRAM DEVELOPMENTS IN CANADA

AGRICULTURAL PRODUCTS MARKETING ACT

(Ontario Egg Marketing Levies Order, Amendments)

As of July 31, 1972, every producer will have to pay to the commodity Board, in addition to the service charges set out under the Plan, levies at the rate of one cent per dozen eggs sold by him.

(Prince Edward Island Vegetable Order)

The Prince Edward Island Commodity Board has been authorized to regulate the marketing of vegetables in interprovincial and export trade and, for such purposes, to exercise all its powers in relation to the marketing of vegetables within the Province under the Act and the Plan. (August 29, 1972)

(Manitoba and Saskatchewan Milk Marketing Levies Order)

Every milk producer from these provinces will have to pay to their respective Board, in addition to the contribution pursuant to the Plan, levies at the rate of ten cents for each 100 pounds of milk or \$0.0285 for each pound of butterfat sold to a plant that is not in excess of his quota. The milk producer will pay to his respective Board in addition to the contribution pursuant to the Plan, the amount of \$1.50 for each 100 pounds of milk or \$0.4286 for each pound of butterfat sold in excess of his quota. The cream producer will pay, in addition to the contribution pursuant to the Plan, levies at the rate of 22 cents for each pound of butterfat sold in excess of his quota. (August 30 and 31, 1972)

(Alberta Milk Marketing Levies Order, Amendment)

The milk producer in Alberta will pay, in addition to the contribution pursuant to the Plan, levies at the rate of \$1.50 for each 100 pounds of milk or \$0.4286 for each pound of butterfat sold in excess of his quota. The cream producer will pay, in addition to the contribution pursuant to the Plan, levies at the rate of 22 cents for each pound of butterfat sold in excess of his quota. (August 31, 1972)

(Ontario Milk Marketing Levies Order, Amendment)

Ontario milk producers will have to pay, in addition to the licence fees set forth under The Ontario Milk

Marketing Plan, levies at the rate of \$1.50 for each 100 pounds of milk sold in excess of his quota. (August 31, 1972)

CANADA AGRICULTURAL PRODUCTS STANDARDS ACT

(Beef Carcass Grading Regulations)

Fifteen grades for beef carcasses have been established. These grades are derived at according to the amount of "fat between the eleventh and twelfth ribs at the minimum point of thickness in the fourth quarter from the vertebrae along the longitudinal axis of the *Longissimus dorsi* muscle and perpendicular to the outside surface of the fat". (August 29, 1972)

(Veal Carcass Grading Regulations)

Five grades for veal carcasses have been established. They are Canada A, Canada B, Canada C, Canada D and Canada E.

The standards for the grades of carcasses have been established. Canada A carcasses have the following characteristics: excellent conformation, finish and quality and uniformly fleshed with full rounds, plump loins, broad thick shoulders and breasts, and short, thick necks and breasts; firm, fine grained, pinkish flesh; soft reddish bones; exterior fat covers that range from fairly thick over the backs and loins on heavier carcasses to proportionately less on lighter weights; and fairly large deposits of interior fats. (August 29, 1972)

CANADIAN WHEAT BOARD ACT

(Canadian Wheat Board Regulations Amendment)

The Board will pay 60 cents per bushel for grade No. 2 Canada Western oats and 96 cents per bushel for grade No. 3 Canada Western Six Row barley. These are the prices paid in store at Thunder Bay or Vancouver. (August 1, 1972)

The Board will pay to oat producers \$1.76 per bushel for grade No. 1 Canada Western Red Spring and will pay to any person 30 cents per bushel between August 1 and October 16, 1972 for grade No. 1 Manitoba Northern.

The Board will pay to oat producers 70 cents per bushel, in store at Thunder Bay or Vancouver, for grade No. 2 Canada Western and will pay to any person ten cents per bushel for the same grade between August 1 and October 16, 1972.

The Board will pay to barley producers the sum of \$1.05 per bushel, in store at Thunder Bay or Vancouver for the grade No. 3 Canada Western Six Row; the Board will pay to any person nine cents per bushel for the same grade between August 1 and October 16, 1972. (October 12, 1972)

AID AGREEMENT FOR ONTARIO AND QUEBEC FARMERS

In August, Federal Agriculture Minister H.A. Olson announced a \$20 million federal-provincial aid program for farmers in Ontario and Quebec. The assistance program includes these aspects:

- **Loans** at preferred rates to farmers who are short of operating capital.
- **Fodder subsidy** with one-third of the transport costs paid by the program.
- **Subsidy on cattle fees**; an amount up to a maximum of \$800 per farm.
- **Cash grants** for example, "no dairy farmer will lose subsidy eligibility quota due to production cuts forced by catastrophic weather conditions". 22,500 farmers in wet-damaged areas in Ontario and Quebec will receive \$400 cash grants.

EGG AGREEMENT

This agreement, signed by Federal Agriculture Minister H.A. Olson and the nine provincial Ministers of Agriculture during the Canadian Agricultural Outlook Conference, should improve the marketing system for Canadian eggs. "These improvements should introduce savings within the marketing system which can be passed on to producers in the form of improved incomes and income stability", said Mr. Olson.

FINANCIAL ADMINISTRATION ACT

(Animal Blood-Typing Fees Regulations)

The geneticists employed by the Health of Animals Branch of the Department of Agriculture will charge \$22.00 for the blood-typing (except for freemartinism) of each animal, and \$35.00 for the freemartinism blood-typing of each animal. (November 6, 1972)

AGREEMENT ON SMALL FARMS DEVELOPMENT PROGRAM

In August Federal Agriculture Minister H.A. Olson and Ontario Agriculture Minister W.A. Stewart signed an agreement to implement the Small Farms Development Program in the province of Ontario. This program will help farmers to develop more profitable farms. The objectives of the agreement are to:

- "facilitate land transfers toward the development of economically viable family farms;
- assist owner-operators of small farms to realize on their equity in their farm holdings."

In October H.A. Olson and New Brunswick Agriculture Minister J.S. Brooks signed the same agreement mentioned above.

In November H.A. Olson and British Columbia Agriculture Minister Dave Stupich also signed the same agreement.

Alberta was the first province to enter the Small Farms Development Program.

PUBLICATIONS

ECONOMICS BRANCH PUBLICATIONS

National and Regional Economic Models of Agriculture. R.K. Eyvindson, Research Division, Economics Branch. 148p. Graphs. Pub. No. 72/9.

Agricultural Statistics for Canada. Economics Branch. 97p. Tables. Revised 1972. Pub. No. 71/6.

Provincial Agricultural Legislation in Western Canada, 1971. T.F. Joyce, Economics Branch. 122p. 1972. Pub. No. 72/8.

Outlook '73 - Situation '72. Market Outlook Section, Marketing and Trade Division, Economics Branch, Agriculture Canada, Ottawa, 1972. This publication contains the background material for the 33rd Canadian Agricultural Outlook Conference held on November 20 and 21, 1972. The Situation papers describe the recent trends in the production and marketing of agricultural commodities and the Outlook papers give the expected future trends for the same commodities.

A second bulletin **Proceedings '72**, contains the speeches presented at the Conference, and report on the implications and alternatives of the outlook statements.

AGRICULTURE CANADA PUBLICATIONS

Available from the Information Division, Agriculture Canada, Ottawa, Canada, K1A 0C5

Growing Vegetables in the Prairie Garden. C. Walkf, Research Station, Morden, Manitoba. 1958. Reprinted, 1972. 18p. Illus., table. Cat. No. A53-1033. Free.

Growing Red Raspberries in Eastern Canada. D.L. Graig. Ottawa, 1964. Reprinted, 1972. 15p. Illus., tables. Cat. No. A53-1196. Free.

Origin of Livestock Marketed. Monthly report. Cat. No. 77-11/42-3. Free.

Reclaiming Acid Dome Peat Bags for Agricultural Use. J.J. Jasmin and H.B. Heeney. Ottawa, 1960. Reprinted, 1972. 15p. Illus., tables. Cat. No. A53-1089. Free.

Newcastle Disease. J.E. Lancaster, Health of Animals Branch. A review of some of the literature published

between 1926 and 1964. Ottawa, 1966. Reprinted, 1972. 188p. Illus., tables, figures, graphs, maps. Cat. No. A63-1254. \$2.00 per copy.

Dairy Produce Market Report. Weekly departmental publication. Cat. No. A77-7/47-41. Free.

GOVERNMENT OF CANADA PUBLICATIONS

Available from Information Canada, 171 Slater Street, Ottawa, K1A 0S9

Soil Capability for Agriculture: Canada Land Inventory. Environment Canada, Ottawa. Folded map with general description and descriptive legend. 35¢ per copy.

1) 31H - Montreal, Quebec. 1972. Cat. No. En. 64-2/31H.

2) 83G - Wabamun Lake, Alberta. 1972. Cat. No. En. 64-2/83G.

Land Capability for Wildlife - Ungulates: Canada Land Inventory. Environment Canada, Ottawa. 62J - Neepawa, Manitoba. 1972. Folded map with general description and descriptive legend. Cat. No. En. 64-4u/62J. 35¢ per copy.

Animal Contagious Disease Act. Administered by the Health of Animals Branch, Department of Agriculture. R.S.C. 1970. C. A-13 and the regulations made thereunder. Office Consolidation. Ottawa 1972. 107p. Cat. No. YX-75-A-13-1970. Free.

STATISTICS CANADA PUBLICATIONS

Available from the Publications Distribution Unit, Statistics Canada, Ottawa, K1A 0T7

Agriculture: Number and Area of Census Farms, Census Subdivisions. Census of Canada, 1971. Advance bulletins. Ottawa, 1972. 69p. Tables, map fold. Cat. No. CS96-728. \$1.50 per copy.

Dairy Product Industry. Annual census of manufactures. Ottawa, 1972. 12p. Cat. No. 32-209/1970. 50¢ per copy.

Census of Canada. 1971. Advance bulletin prepared in the Census Division. A-A-5. Agriculture: Census-farms by economic class; farms with sales of \$2,500 or more by product types. Ottawa, 1972. Tables, maps. Cat. No. CS96-722. 75¢ per copy. A-A-7. Agriculture Irrigation. Ottawa, 1972. Tables, map fold. Cat. No. CS96-724.

Farm Cash Receipts. Monthly. Bilingual. Cat. No. CS21-001. 20¢ per copy, \$2.00 per year.

Farm Input Prices Indexes. Quarterly. Bilingual. 1972. Cat. No. 62-004. 25¢ per copy, \$1.00 per year.

Farm Implement and Equipment Sales. Vol. 14 No. 7, January 1 to July 31, 1972. Cat. No. CS57-002. \$3.00 per year.

Report on Livestock Surveys: Pigs. Monthly. Bilingual. Cat. No. CS23-005. 25¢ per copy, \$1.00 per year.

Feed Industry. Annual Census of manufactures. Ottawa, 1972. 14p. Tables. Cat. No. CS32-214/1970. 50¢ per copy.

OTHER PUBLICATIONS

Economic Influence of the Canadian Agriculture and Food System. P.F. Appleton. Agricultural and Economics Research Council of Canada, Ottawa, 1972. 9p.

Alternatives for the Ontario Tender Fruit Industry. E.L. Chudleigh. Ontario Food Council.

Ninth Annual Review: The years to 1980. Prepared and published by the Economic Council of Canada. Nov. 1972. 107p. Cat. No. EC21-1/1972. \$2.50 per copy.

The Economy to 1980: Staff Paper. Prepared and published by the Economic Council of Canada. Nov. 1972. 334p. Cat. No. EC21-1/1972-1. \$3.50 per copy.

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CORRECTION

Volume 7, Number 4, October 1972

Page 3, column 1, line 1 - "exports" should read "cheddar cheese exports"

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IN REPLY TO AUTHORS AND EDITORS REGARDING DECEMBER 72
CANADIAN FARM ECONOMICS

I have read the following article(s):

- (1) Agricultural Finance Situation and Outlook Observations
- (2) The Evolution of Supply Management in the Canadian Dairy Industry
- (3) Farm Business Analysis – Its Methods and Objectives
- (4) Agricultural Exchanges in the United States

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This article was: not useful 1 2 3 4 5 6 7 8 9 10 very useful.

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VOLUME 8

NUMBER 1

FEBRUARY 1973

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Agriculture
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DETERMINANTS OF CHANGE IN CANADIAN BEEF CATTLE SLAUGHTER



A.M. Boswell *

Today, the cattle business is by far the largest agricultural enterprise in North America. In both Canada and the United States, farm cash income from the sale of cattle and calves for slaughter produces about one-quarter of all cash receipts from farm marketings, nearly twice as much as any other farm product. Similarly, consumers spend nearly twice as much for beef as for any other food.

According to many authorities, the Canadian beef industry is at an important turning point. Cattle slaughter, after increasing at a slower rate than usual for the last few years, now seems likely to increase at a faster rate during the next few years. This potential upturn in cattle slaughter is of real significance to beef cow and feedlot operators, packers and the consuming public.

Recently, at the National Beef Seminar in Calgary, Mr. Charlie Gracey, Manager of the Canadian Cattlemen's Association, in his paper "Canadian Beef Production

The pattern of cattle numbers on farms and slaughtering levels tend to follow cyclical patterns, that are highly correlated.

In 1968, beef cow operators in North America made the decision to start a new cattle cycle by increasing the size of their beef breeding herds.

Building-up beef herds reduces cattle slaughter in the short run, raises cattle prices, and thereby feeds the fire built under herd expansion.

Today" raised some very important and timely questions: "Is the Canadian beef cow herd large enough? Is it too large? Are we near another peak in the cattle cycle or will expansion continue another year or more?"

IMPORTANCE OF CATTLE CYCLE

In the past, cattle and calf numbers on farms and beef slaughter tended to increase by turns; that is, one follows the other.¹ The number of cattle and calves increases faster than slaughter for a few years, then slaughtering levels catch up and increase faster than numbers on farms. Slaughter and feeder cattle prices, rise most rapidly when slaughtering is restricted by producers in order to enlarge breeding herds. When slaughter and beef output are increased significantly, cattle prices usually increase very little, or decline.

The variations in total cattle and calf inventories on farms has been regular enough in the past to be called by many a "cattle cycle." However, the cattle cycle is not a smooth affair, and because of such influences as wars, droughts, expanding beef demand and the changing

*This article is based on a paper delivered by A.M. Boswell, Economics Branch, Canada Department of Agriculture, Ottawa, to the National Beef Seminar "Planning For Profit", which was held in Calgary, on November 6, 1972. These comments were in response to the paper, "Canadian Beef Production Today," by Mr. Charles Gracey, Manager, Canadian Cattlemen's Association.

¹L.H. Simerl, Beef Industry Is At a Turning Point, Cooperative Extension Service, College of Agriculture, University of Illinois, Urbana, Illinois, January, 1973.

structure of the cattle industry no two cycles have been exactly alike. Nevertheless, the cattle numbers cycle is an important analytical tool for predicting cattle slaughter, and for a period of years, the best single indication of the past beef supply situation in Canada.²

Since 1950, the Canadian beef industry has experienced two complete cattle numbers cycles; from 1950 to 1958, and again from 1959 to 1968 (Figure 1). It is of considerable importance to note that in the United States two complete cattle numbers cycles have also occurred during the same period. The current situation with respect to beef production is significant because in both countries a new cattle numbers cycle commenced in 1969 and has been on the upswing since then.

Determining which phase a cattle cycle is in becomes fundamental to understanding what is happening in the beef industry. Depending on whether cattle numbers on farms are on an upward trend as in 1959 to 1965, downward as in Canada during 1965 to 1968, or levelling off as in the U.S., will greatly influence the level of beef slaughter as shown in Figure 2. The phase of the cycle also has a major bearing on prices, consumption and trade.

IMPORTANCE OF U.S. CATTLE CYCLE TO CANADA

Large flows of goods and services move between Canada and the U.S. This is especially the case in live cattle and dressed beef. Institutional barriers to trade, such as tariffs and quotas have a minimal effect. Two-way trade, along with the close proximity of the Canadian and U.S. cattle industry, results in similar base-point pricing and price movements, within what is commonly called a "North American market". As a result, the movement of cattle numbers and beef output in Canada is directly tied to conditions in the United States, especially cattle prices. This close relationship is illustrated in the enclosed figures.

Thus, when rationalizing the economic trends of the Canadian beef industry, the powerful influence from the large U.S. beef industry cannot be overlooked. The U.S. market has often provided an important safety valve for our market when feeder or slaughter cattle exceeded our requirements. This was the case during the mid 1960's. In recent years, the U.S. markets have been a source of live cattle for slaughter in Canada.

REASONS FOR BEEF CATTLE CYCLE

The present nature of cattle production is such that the pattern of cattle numbers on farms and slaughtering levels tend to follow cyclical patterns, that are highly correlated. This suggests that most of the cyclical pattern in the cattle numbers cycle is in the beef component rather than in dairy cattle numbers. In fact, since the early 1950's dairy cow numbers have been steadily declining in both Canada and the U.S. whereas beef cow numbers have sharply increased. Notwithstanding the importance of dairy beef, the variations in total cattle inventories shown in Figure 1 are basically due to the variations in the growth rate of beef cow numbers and beef cattle slaughter.

The reasons for the cyclical pattern of cattle numbers on farms and slaughtering levels are mainly related to the expectations of cattle producers themselves and the nature of the cattle business. Cattle producers (ranchers and feeders) tend to base price and/or profit expectations on actual prices received in the present and recent past.

There are several ways beef producers can respond to price expectations. In the short run, cattle producers can step-up beef production by feeding to heavier weights and by feeding out more calves (mainly veal calves) to maturity. This trend explains nearly all of the recent increases in beef tonnage in Canada, and to a lesser degree the U.S., since 1965. However, major increases in beef output, particularly fed beef, must follow a build-up in the basic beef cow inventory. Increasing beef production by this means takes a minimum of nearly three years. In the past, with this much time lag, expansions and/or contractions in beef output often go too far before being reflected in market prices, causing overadjustment in the other direction.

The 1950-58 Cycle

This can be illustrated by what happened in the 1950-58 cycle. In both Canada and the U.S., slaughter and feeder cattle prices were at record levels during 1950-52. This set the stage for cattle expansion in both countries — Canada until 1957 and the U.S. until 1956 (Figure 1). In both countries, feeder steer prices declined from the relatively high levels of over \$32 per cwt. during 1950-52, to less than \$20 in 1955-1957. The result was an increase in cow slaughter, followed by a decrease in cattle numbers on farms, and a corresponding decrease in total slaughter. This resulted in a sharp rise in slaughter and feeder cattle prices beginning in 1958 (Figures 3 and 4).

² John Ferris, Factors Affecting Cattle Prices, Michigan State University, Publication No. 25, July, 1969.

CATTLE AND CALVES ON FARMS, 1950-72

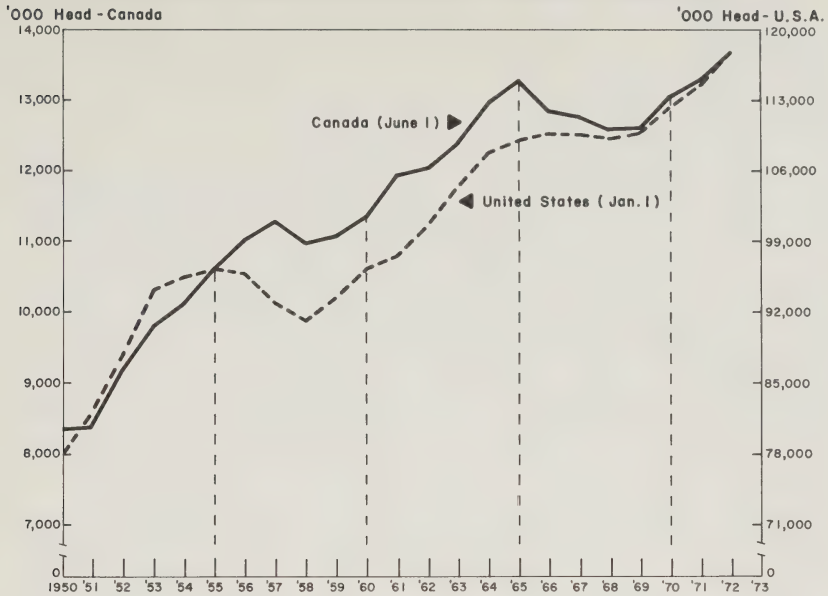


FIGURE 1

COMMERCIAL CATTLE SLAUGHTER IN CANADA - UNITED STATES 1950 TO 1973

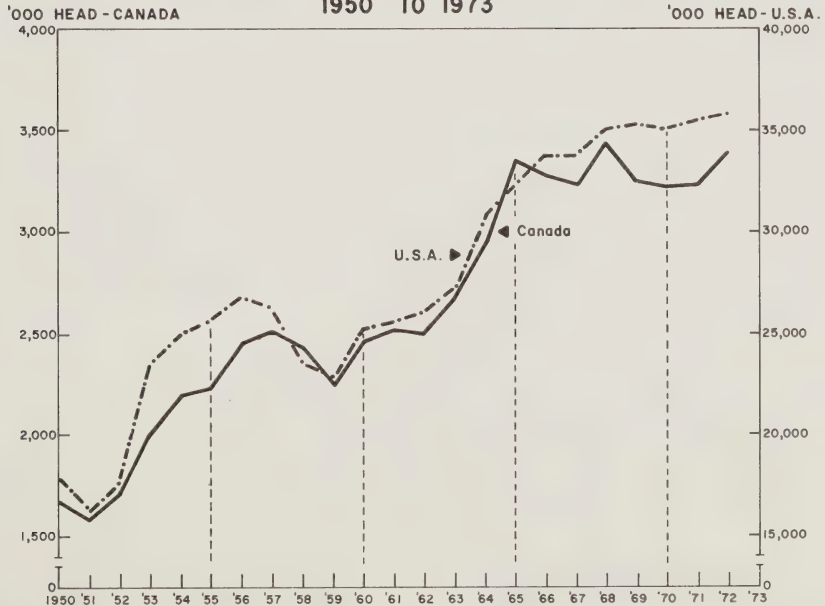


FIGURE 2

CHOICE STEER PRICES - TORONTO AND OMAHA

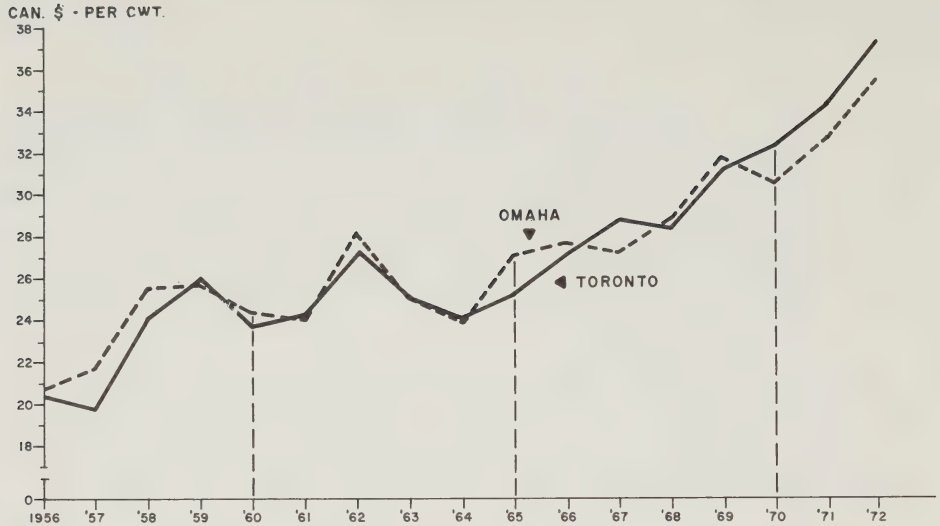


FIGURE 3

FEEDER STEER PRICES - CALGARY AND KANSAS CITY

All Grades - 500 Pounds and Over

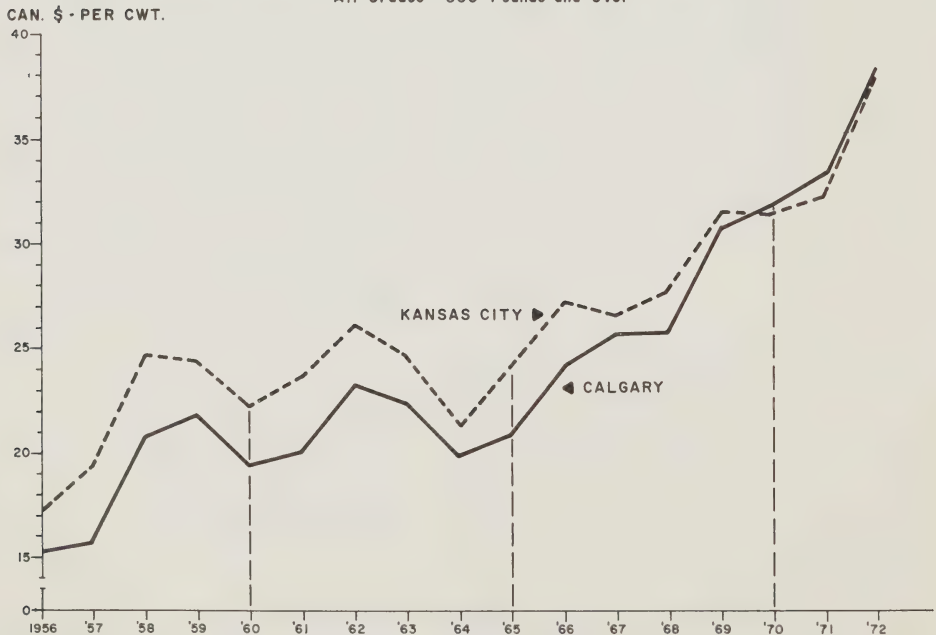


FIGURE 4

PRICE OF GOOD FEEDER & CHOICE STEERS IN CALGARY

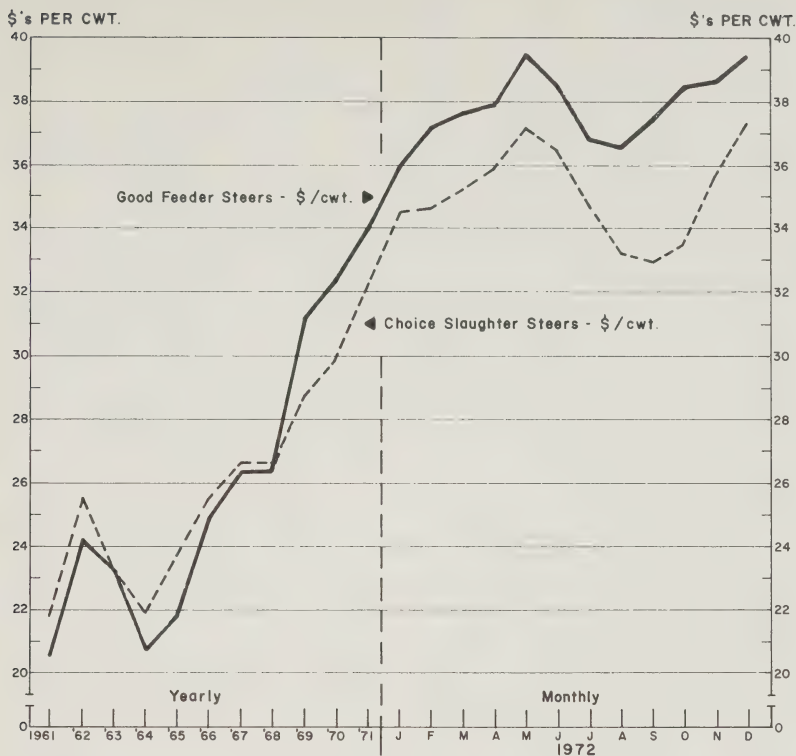


FIGURE 5

The 1959-68 Cycle

The sharp rise in cattle prices in 1958 set the stage for the upswing of a new cattle numbers cycle beginning in 1959. Numbers on farms increased rapidly until 1965. An unusual sharp slaughter increase in 1960, followed by a severe drought in 1961, adversely affected cattle prices during this period. However, prices recovered and in 1962 were at high levels.

From 1965 to 1968, total cattle numbers in Canada declined, but remained somewhat stationary in the U.S. This situation directly reflects the sharp break in the level of feeder cattle prices during 1964, which paralleled the decrease in fed cattle prices. This indicates that the demand for feeder cattle is basically a derived demand from the price of slaughter cattle.³

The Current Cycle 1969 — ?

Since 1965, feeder cattle prices in both Canada and the U.S. moved sharply upward. Thus, in about 1968, as reflected in the relatively sharp increase in cattle numbers beginning in 1969, beef cow operators on this continent made the decision to start a new cattle cycle by increasing the size of their beef breeding herds. Since 1969, this upward trend in beef cattle numbers on farms and ranches has continued.

However, the recent upturn in cattle numbers required a relatively long period of time to develop and sharply higher feeder cattle prices than compared with any previous upturn. This, in effect, partly underlies the rapid rise in beef production costs.

The recent rise in cattle numbers has not yet been reflected in sharply higher cattle slaughter. In addition to the time lag from expansion of the breeding herd to resulting slaughter, the process of building-up (or liqui-

³ A.M. Boswell and G.A. MacEachern, Determinants of Changes in the North American Feeder - Cattle Economy, Canadian Journal of Agriculture Economics, Volume XV, No. 1, 1967.

TABLE 1 — TOTAL CATTLE AND CALVES, BEEF COWS, AND TOTAL CALVES ON FARMS, CANADA (JUNE 1), U.S.A., (JANUARY 1)

	Unit	1964	1969	% Change 1964 to 1969	1971	1972	% Change 1971 to 1972
Canada							
Cattle-Calves on Farms	000 head	12,994.0	12,586.0	-3	13,270.9	13,656.5	+3
Beef Cows on Farms	000 head	2,830.1	2,939.1	+4	3,514.3	3,679.4	+5
Calves on Farms	000 head	2,595.0	3,429.9	-4	3,666.7	3,801.6	+4
Calf Slaughter	000 head	1,153.7	903.5	-22 ¹	763.7	—	—
Cattle Slaughter	000 head	2,965.8	3,254.6	+10 ¹	3,299.3	3,390.0	+3 ^P
Dressed Weight	Mil. lb	1,573.5	1,801.3	+14 ²	1,836.6	—	—
United States							
Cattle-Calves on Farms	000 head	109,000.0	112,303.0	+3	114,470.0	117,916.0	+3
Beef Cows on Farms	000 head	32,794.0	35,250.0	+7	37,533.0	38,725.0	+3
Calf Crop on Farms	000 head	43,809.0	45,196.0	+3	46,974.0	48,445.0	+3
Calf Slaughter	000 head	7,254.0	4,863.0	-33 ¹	3,689.0	3,051.3	-17
Cattle Slaughter	000 head	30,818.0	35,237.0	+14 ¹	35,585.0	774.0	+1 ^P
Dressed Weight	Mil. lb	18,456.0	21,158.0	+15 ²	21,697.0	—	—

¹ Commercial slaughter, inspected plus uninspected.

² Cold dressed carcass weight.

p = preliminary.

dating) beef cow herds adds another element of instability to the cattle market. Building-up beef herds requires holding back more cows and heifers which normally would go to slaughter. This reduces cattle slaughter in the short run, raises cattle prices, and thereby feeds the fire built under expansion. This was in part the situation during 1962-72, when annual cow slaughter in Canada averaged 610 thousand head, 16 percent below the 1963-66 average.

EXPANSION OF BEEF COWS TO CONTINUE

Many of the forces that have generated the recent beef cow build-up in North America are still active⁴. The key element was the rapid rise in feeder cattle prices to record levels in 1972, which provided the basic incentive to producers for further herd expansion. The growth in demand for beef has been the dominant factor in generating higher feeder cattle prices. In addition, the recent growth and development of the feedlot enterprise, especially in Canada, has also stimulated feeder cattle prices. Therefore, feeder cattle prices have become responsive to changes on the supply side of the beef industry in addition to the demand for fed beef. This has contributed to the fact that, price margins between feeder and finished cattle prices have become quite commonly negative, affecting the profitability of the feedlot business (Figure 5).

Other factors which have helped account for the increased relative importance of beef production in

North America are: some shift from dairy to beef; a growing number of part-time farmers with a strong preference for a beef enterprise, particularly in the United States the increased carrying capacity of land; and reduced labor required by the beef enterprise compared to many other enterprises. On balance, however, some of these factors have been offset by the rapid price rise in production inputs, e.g., land, feeds, capital, breeding stock, and labor rates.

The significance of the current cattle inventories is twofold: how much change in cattle inventories is occurring and what is the duration of the upswing in total cattle numbers now underway. If inventory estimates in both Canada and the U.S. are valid then sometime soon cattlemen will begin to send increasing numbers to market. With respect to the duration of the increase in cattle numbers, the last two upswings in numbers lasted about seven years. Based on the past two cycles, this would indicate a continued expansion in beef cow numbers and thus beef output until at least 1975. For example, from 1959 to 1966, when cattle numbers increased sharply, the annual rate of increase in Canadian beef output in pounds was 6.2 percent (U.S., 5.5 percent). From 1966 to 1971, the annual increase in Canada was less than one percent (U.S., 2.2 percent).

However, when using past cattle cycles to project the current one, there are some important changes that must be considered.

On the demand side, the beef price situation on this continent is currently affected by the fundamental principle that beef is in a demand-dominated market,

⁴ Glenn Grimes, Feeder Cattle and Beef Cows, University of Missouri, Columbia, Midwest Conference of Outlook, Urbana, Illinois, August, 1972.

even though beef supplies per person are currently at record levels. In short, beef prices have risen because of increased consumer demand. This is not only due to population growth, but also to the rapid rise in consumers real income, and the increasing preference expressed by consumers for beef. This situation does not only apply to North America but also throughout many countries of the world.

Furthermore, about forty percent of the total growth in Canadian food sales during the last ten years was from the food service industry, i.e. away-from-home eating. This is important to the beef industry and extremely important in the future, because the more people eat out, the proportionately more beef people eat.

On the supply side, increased beef tonnage on this continent in the 1970's will be tied directly to the rate of increase in beef cow numbers. The cost of producing beef in the 1970's will no doubt average above that of the 1960's.

The probability exists that within the next few years beef production may be growing faster than demand, with resultant price declines to producers. The industry cannot afford to be complacent about this possibility. However, this possibility is not nearly as alarming as the same outlook would have been a decade ago⁵.

For a number of years, beef production has increased faster than the number of beef cows or the calf crop (Table 1). This has been possible because of a continued trend toward slaughtering a larger share of our animals, especially dairy steers, as cattle rather than calves and by grain feeding a larger proportion of cattle. This is still going on, but the point will soon be reached where essentially everything is fed that is fit to feed. So the potential for a six percent increase in the cow herd does not necessarily mean an even greater year-to-year increase in beef tonnage, as it might have several years ago.

Furthermore, we should not overlook the fact that 80 percent of the farms reporting beef cows in the 1971 census were in the class of 32 beef cows or less per farm. Another important relative statistic from the 1971 census is that over one-half of the Canadian beef cow herd of 3.5 million head are in herds of less than 50 cows per farm. Adequate cattle prices to this group of cattle raisers are imperative if Canada expects to increase its beef production during the 1970's. From this, one can conclude that one of the opportunities for expansion is in the smaller beef herds. However, unless

cattle prices are good, the small herd owners will not respond because the economic rewards are not that great. The response of small scale beef cow herd owners will be a key factor to our future beef supplies, as they can drop out of the business a lot quicker and easier than a rancher with 100 cows or more.

CONSUMERISM

We live in an increasingly consumer-oriented economy where governments have become more aware of "Consumerism". Cattlemen should never forget that while farmers have already established the amount of beef to be produced within the next several months, consumers will determine how much they are willing to pay for beef. That, in turn, helps to set the price that packers will generally pay for cattle. Although the action of one consumer alone has no influence on the market, there are several million consumers in North America controlling the spending of millions of dollars for beef each week. Thus, they exert a major control over beef cattle prices and can be expected to do so during the 1970's.

SUMMARY

The beef production system is highly complex and helps to illustrate the complexity of the beef industry maze.

In the production of beef, excess output tends to last longer than for other agricultural products and shortages also tend to last longer. It takes considerable time to slow down beef production as well as to gear up for more production. This is why the industry must keep a constant watch on production as related to market demand.

In the short run, beef production can be increased within limits by increasing slaughter weights and changing the proportion of veal calves carried to maturity for slaughter. However, the wide swings in beef slaughter arise from changes in the size of the national beef cow herd. This process takes up to five years or more before the full impact is realized.

The sequence of events which develops as the cow herd expands or contracts, is quite complex. The rise or fall of feeder cattle prices is a key element in producers' decisions affecting the expansion or contraction of breeding herds.

The rapidly expanding demand for beef and the changing structure of the cattle industry will continue to reshape the cattle cycle. Nevertheless, the cycle still is one useful analytical tool for looking into the future of the beef industry.

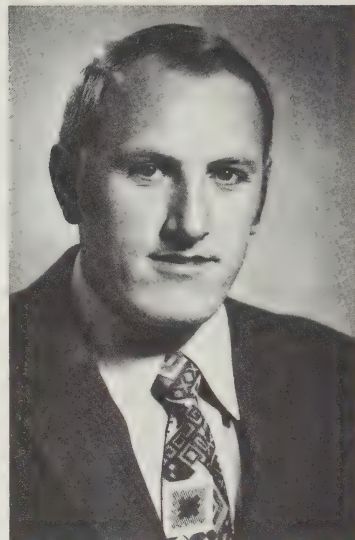
⁵ Doane's Agricultural Report's, This Business of Agriculture, St. Louis, Missouri.

ALFALFA SEED PRODUCTION



K.D. Russell

The potential for expansion in the domestic alfalfa seed market depends greatly on the ability of western Canadian farmers to produce varieties of seed adapted to other regions in competition with current seed sources.



B.H. Sonntag*

Recently, farmers in western Canada have shown great interest in several crop and livestock enterprises that were traditionally of minor or sporadic interest. This interest is partially due to four main factors:

- (1) The search for sources of cash income to alleviate cash flow problems created by grain marketing difficulties,
- (2) Incentives of various kinds that were designed to reduce wheat production and encourage diversification,
- (3) Changes in relative prices of products, and
- (4) New technology which has improved the relative competitive position of these enterprises.

Examples of crops that have been influenced by these factors are rapeseed, flax, mustard, sunflowers, and alfalfa seed.

This article reviews production trends and technological developments for alfalfa seed (*Medicago sativa* L.) and examines the production costs and market potential. Its

primary purpose is to inform farmers, extension workers, and researchers of the current situation in this industry and the potential of this crop for western farmers.

TRENDS IN PRODUCTION AND TRADE

Alfalfa seed production in Canada has been highly variable, but generally a downward trend. From 1951 to 1970, seed production ranged from a high of 13.5 million pounds (1952) to a low of just over 1.0 million pounds (1969) (Table 1).

During the 1951-56 period seed production averaged 7.2 million pounds and fluctuated between 3.8 million and 13.5 million. During the next five-year period, average output of alfalfa seed declined to 3.5 million pounds and fluctuated between 1.3 million and 6.0 million pounds. Average output increased slightly to 4.4 million pounds and ranged from 3.2 million to 5.8 million pounds in the 1961-66 period. Production declined again in the next five-year period averaging 2.7 million pounds and ranging from 1.0 million pounds in 1969 to 5.6 million pounds in 1967.

*Mr. K.D. Russell and Dr. B.H. Sonntag are research economists with the Economics Branch of Agriculture Canada at the Lethbridge Research Station.

TABLE 1. ALFALFA SEED PRODUCTION IN CANADA BY PROVINCES, 1951-70

Average									Average
1951-56 1956-61 1961-66									1966-71
— '000 pounds —									
Canada	7,237	3,511	4,439	2,139	5,602	1,880	1,064	2,689	2,675
Ontario	1,005	558	852	843	207	40	221	164	294
Manitoba	1,355	1,008	1,054	750	1,750	250	178	950	775
Saskatchewan	780	640	480	125	1,000	500	100	500	445
Alberta	3,683	1,206	1,969	371	2,452	990	550	1,020	1,077
British Columbia	412	99	84	50	200	100	15	55	84

Source: The Canadian Agricultural Situation, several issues, 1968-71, Marketing and Trade Division, Economics Branch, Canada Department of Agriculture.

The three Prairie Provinces produce over 80 percent of Canada's alfalfa seed. About 45 percent of the total is produced in Alberta. Manitoba ranks second with an average of 23 percent and Saskatchewan is third with 13 percent.

The downward trend in seed production, coupled with an increase in seed use, resulted in Canada being a net importer of alfalfa seed throughout the 1956-71 period. Domestic disappearance averaged 5.3 million pounds in the 1956-61 period and 6.9 million pounds in each of the subsequent five-year periods (Table 2). Meanwhile, exports have declined steadily. The average difference between production and domestic disappearance of alfalfa seed increased from 1.8 million pounds in the 1956-61 period to 4.3 million pounds in the 1966-71 period.

Alfalfa seed production locations within the Prairie Provinces have changed several times during the last 30 or 40 years. Prior to 1940 the Eastern Irrigation District in southern Alberta was an important alfalfa seed

production area. Since then alfalfa seed production has been concentrated in the Parkland areas of the Prairie Provinces. The 1961 Census of Agriculture shows, for example, that in Alberta in the 1960-61 crop year, 85 percent of the alfalfa seed was produced in census divisions 10 to 15 (roughly the area north of Edmonton). Similar concentrations occurred in the Parkland areas of Saskatchewan and Manitoba. Recently the Eastern Irrigation District has once again become an important alfalfa seed producer. Although the 1966 and 1971 censuses do not show alfalfa seed production by census division, data from other sources indicate that about half of the alfalfa seed produced in Alberta is now grown in the Eastern Irrigation District. In the 1960-61 crop year the census division in which this area is situated produced only 10 percent of Alberta's alfalfa seed.

PRODUCTION TECHNOLOGY

The historical production pattern for alfalfa seed can probably be attributed primarily to problems associated

TABLE 2. ALFALFA SEED: SUPPLY AND DISPOSITION, CANADA, 1956-71 (CROP YEAR ENDING JUNE 30)

	Average							
	1956-61	1961-66	1966-67	1967-68	1968-69	1969-70	1970-71		1971-72
— '000 pounds —								
Stocks, beginning of year . .	1,223	1,680	1,464	1,484	4,080	1,482	1,058	2,738
Production	3,511	4,439	2,139	5,602	1,880	1,064	2,689	
Imports	3,653	3,464	4,533	3,052	3,215	7,581	5,882	
Total supply	8,387	9,583	8,136	10,138	9,175	10,127	9,629	
Exports	1,371	1,229	536	475	280	150	140	
Available for domestic use	7,016	8,354	7,600	9,663	8,895	9,977	9,489	
Domestic disappearance . .	5,336	6,890	6,116	5,583	7,413	8,919	6,751	

Source: The Canadian Agricultural Situation, several issues, 1968-71, Marketing and Trade Division, Economics Branch, Canada Department of Agriculture.

with pollination. In the past, agronomists recommended the use of relatively small fields near areas of bush or rangeland for alfalfa seed production¹. This practice was recommended to facilitate pollination by wild insects. The population and activity of wild pollinating insects varied considerably and, hence, seed set was uncertain and sporadic. Fields where seed set was unsatisfactory were often harvested for hay. Honey bees were tried as an alternative to wild bees but proved to be inefficient pollinators of alfalfa. Various mechanical pollination techniques were also found to be unsatisfactory. Another factor contributing to pollination difficulties was clearing and breaking activity, which eliminated the habitat of native bees. The relocation of alfalfa seed production from southern to northern areas in the 1940's and 1950's and the subsequent decline in production can probably be attributed to this activity.

The renewed interest in alfalfa seed production, especially in southern Alberta and Saskatchewan, can be attributed, in large measure, to work by Canadian entomologists and agronomists that resulted in the domestication of the alfalfa leafcutter bee (*Megachile rotundata* F.) and the development of management techniques for the effective utilization of this bee as a pollinator². The alfalfa leafcutter bee cannot naturally survive Canadian winter. However, this bee readily adapts its nest-building activities to man-made domiciles and can, therefore, be "managed" to become an effective alfalfa pollinator.

The alfalfa leafcutter bee works particularly well in southern areas of the Prairie Provinces where climatic conditions during alfalfa blooming are conducive to nest-building and, hence, pollination activity³. Although this bee is being used in more northerly areas it is less effective there because climatic conditions reduce the number of its flying hours and, hence, its pollination activity. This is one of the major factors responsible for the recent regional shift in alfalfa seed production. Associated with the regional shift in production is a marked tendency towards larger fields and specialized seed production practices. Practices such as row-

TABLE 3. ALFALFA SEED YIELD ON IRRIGATED LAND — SWIFT CURRENT¹

Variety	1970	1971
— pounds per acre —		
Roamer	455	366
Rambler	446	384
Beaver	491	402
Vernal	535	420
Average	482	392

Source: D.H. Heinrichs, Canada Department of Agriculture, Research Station, Swift Current.

¹In these trials alfalfa leafcutter bee populations were considered to be adequate for effective pollination.

cropping and low-density planting, which are designed to facilitate pollination activity, have made the harvesting of hay a less attractive alternative than former production practices.

The Research Stations of the Canada Department of Agriculture at Swift Current and Saskatoon have been conducting alfalfa seed yield variety tests for several years. Results of these tests on dryland and irrigated land indicate the yield levels that can be achieved with good management techniques (Tables 3 and 4). Yields on dryland are more variable and tend to average about 55 percent of yields achieved with irrigation.

TABLE 4. ALFALFA SEED YIELD ON DRYLAND — SASKATOON¹

Variety	1968	1969	1970	1971
— pounds per acre —				
Roamer	147	260	232	183
Rambler	169	359	325	172
Beaver	162	325	310	225
Ladak	171	343	328	198
Average	162	322	299	194

Source: D.H. Heinrichs, Canada Department of Agriculture, Research Station, Swift Current.

¹In these trials alfalfa leafcutter bee populations were considered to be adequate for effective pollination.

¹Bolton, J.L. Alfalfa Seed Production in the Prairie Provinces, Canada Department of Agriculture Pub. 984, 1956.

²See the following publications by the scientists responsible for the development of these techniques:
Hobbs, G.A. Domestication of Alfalfa Leaf-Cutter Bees, Canada Department of Agriculture, Pub. 1313, 1967.
Hanna, M.R. and G.A. Hobbs, Alfalfa Seed Production in Southern Alberta, Research Station mimeo, Canada Department of Agriculture, Lethbridge, 1971.

³See Hobbs, G.A., *op. cit.*, p. 4.

PRODUCTION COSTS

The annual cost of seed production per acre in southern Alberta and Saskatchewan, excluding pollination costs, was estimated to be \$46.88 on dryland and \$77.31 on irrigated land (Tables 5 and 6). Pollination costs vary with yield since in many cases pollination services are custom contracted on a crop share basis. Typical contracting arrangements for pollination are: (1) a

TABLE 5. PRODUCTION COSTS PER ACRE FOR ALFALFA SEED – DRYLAND¹

Establishment costs:		Labor (man hours per acre)
Operating costs	\$10.49	2.34
Fixed costs for 2 years	21.84	
Overhead for 2 years	7.84	
Total establishment costs	\$40.17	
Amortized cost per year at/ 8% for 5 years		\$10.11
Yearly costs of production:		
Operating:		
Spring	\$.69	.2
Summer	3.78	1.39
Harvest	16.83	.54
Total operating		21.30
Fixed costs per year		10.92
Overhead		4.55
Total costs per year for alfalfa/ seed production		\$46.88

¹A study was conducted recently at the Canada Department of Agriculture Research Station in Lethbridge to determine costs of producing alfalfa seed in southern Alberta and Saskatchewan under both dryland and irrigated conditions. Data were obtained from the Research Station, growers, and various secondary sources. The following assumptions underlie these estimates:

1. Agronomic practices currently recommended for alfalfa seed production are used. A cover crop is not used in the establishment year.
2. Varieties currently recommended for forage production in western Canada are used. The alfalfa stand is assumed to produce seed for five years.
3. Labor is included at a rate of \$2.00 per hour. Managerial time is not included.
4. Custom pollination, defoliation, and harvesting are assumed.
5. Establishment costs include the cost of summerfallow in the year previous to planting.
6. Pollination costs are not included.

one-third share of the seed to the beekeeper or (2) the first 100 or 150 pounds of seed to the grower and any yield beyond this divided equally between the grower and beekeeper. The data in Tables 3 and 4 suggest average yields of about 240 pounds on dryland and 420 pounds on irrigated land. On the basis of these yields and with one-third of the crop going to the beekeeper, production costs for the grower's share are \$.29 per pound on dryland and \$.28 per pound on irrigated land.

The production cost estimates above are based on averages and specific agronomic practices. Costs vary by years, production methods, variety produced, and other factors. Data are not available in sufficient quantity at this time for an adequate assessment of the sensitivity of production costs to these factors, individually or in combination. Hopefully, research work now underway on yield responses to bee numbers, planting density, fertilizer, and various other agronomic practices will provide the required data.

The profitability of alfalfa seed production depends both on costs and on prices received. Seed prices vary from year to year according to quality and variety (Table 7). Unfortunately, price data, which would

permit a good assessment of the profitability of this enterprise are not available. In the past, yields, prices, and net returns were all highly variable. New technologies have reduced the yield (and cost) variability for adapted varieties. This may, in turn, lead to more stable prices and net returns in the future. It is not clear at this time whether net returns are high enough to justify diverting land and other resources to alfalfa seed from other enterprises. The merits of each case will have to be assessed by the individual farmer in light of his production capability for particular varieties, the prices he expects to receive for the quality and variety of alfalfa seed produced and his alternative opportunities. Some producers have attempted to overcome the problem of price uncertainty through contract arrangements with seed firms.

OUTLOOK

Estimates of the difference between domestic disappearance and production of alfalfa seed (Table 2) have been used as evidence of significant potential for expansion of alfalfa seed production in western Canada. Whether or not this potential exists depends on a number of factors, of which variety is an important one. Varieties

TABLE 6. PRODUCTION COSTS PER ACRE FOR ALFALFA SEED – IRRIGATED LAND¹

Establishment costs:		Labor (man hours per acre)
Operating costs	\$15.76	4.17
Fixed costs for 2 years	50.22	
Overhead for 2 years	7.84	
Total establishment costs	\$73.82	
Amortized cost per year at 8% for 5 years		\$19.12
Yearly costs of production:		
Operating:		
Spring	\$1.61	.24
Summer	10.69	4.24
Harvest	16.83	.54
Total operating		28.53
Fixed costs per year		25.11
Overhead		4.55
Total costs per year for alfalfa/ seed production		\$77.31

¹ See footnote for Table 5.

TABLE 7. PRICES PER POUND RECEIVED BY ALBERTA PRODUCERS FOR CLEANED ALFALFA SEED

Year	Foundation all varieties	Certified				Commercial all varieties
		Vernal	Beaver	Roamer	Rambler	
1971	\$1.50	\$.40	\$.53	\$.53	\$.53	\$.28
1970	1.50	.40	.62	.62	.62	.32
1969	1.00	.55	.75	.75	.75	.36
1968	1.00	.42	.65	—	—	.31
1967	1.00	.35	.65	—	—	.32
1966	1.00	.35	.65	—	—	.30

Source: Communication with a seed firm in Alberta.

developed for use in forage production in western Canada do not perform well in eastern Canada and vice versa. There are, then, two fairly distinct domestic markets for alfalfa seed.

Data on acreages of alfalfa and alfalfa-grass mixtures for forage provide a rough estimate of the extent of these markets. Census data for 1966 show that the Prairie Provinces account for about 55 percent of the total acreage and, presumably, a similar proportion of the alfalfa seed market. This market has expanded in recent years as a result of large increases in forage acreage in western Canada. Tame hay acreage, for example, increased 1.2 million acres in the Prairie Provinces from 1966-71 while decreasing 0.5 million acres in the rest of Canada⁴. Seed pasture acreage also increased substan-

tially in the prairies during this period. Further increases in hay and pasture acreage are expected in order to meet the forage requirements of an expanding cattle population.

Most of the seed currently produced in western Canada is of varieties adapted to this region. In other words, western seed growers are producing seed for the western market. This suggests that a large proportion of the imported alfalfa seed is of varieties adapted to other regions. Data on alfalfa seed imports by province of entry (Table 8) support this suggestion. In 1971, about 57 percent of the imported seed entered through entry points in Quebec and Ontario. These data also suggest that the potential for expansion in the domestic market depends greatly on the ability to produce varieties of seed adapted to other regions in competition with current seed sources.

⁴ Quarterly Bulletin of Agricultural Statistics, Cat. 21-003, Statistics Canada.

Production costs for varieties adapted to the eastern Canadian market are higher than for western Canadian varieties. This is due primarily to their susceptibility to winter-kill in the prairie climate. If the eastern varieties are to be produced by western growers, there will have to be a price differential between eastern and western varieties to offset the production cost differences. Data are not available at this time to determine whether or not such a differential exists.

A further difficulty in seed production for the eastern market relates to plant breeders' rights. The United States has maintained exclusive breeder control for the foundation seed of several varieties that performs well in eastern Canada and has not allowed Canadian growers the right to produce the seed. Therefore, supplies of this seed must be imported from United States sources. This, then, forms a legal or institutional barrier to expansion of seed production for the eastern Canadian market.

The potential for expansion of alfalfa seed production in western Canada depends on the following conditions:

1. Continued expansion of the seed market in western Canada. This market has grown in recent years due to increases in forage acreage in western Canada. It appears that this market can be supplied efficiently by western growers.

TABLE 8. ALFALFA SEED IMPORTS BY PROVINCE OF ENTRY, 1971

Province	Volume (^{'000} lbs)	Value (\$ ^{'000})
Quebec	586.3	258
Ontario	2,901.8	1,285
Manitoba	1,363.2	564
Saskatchewan	320.7	185
Alberta	807.9	342
British Columbia	167.2	76
Total	6,147.1	2,710

Source: Trade of Canada, Statistics Canada

2. Development of new varieties or the obtaining of rights to breed varieties equal to or superior to those obtained currently from United States sources.
3. Development of techniques to improve winter survival of eastern varieties under a seed production regime.
4. Development of marketing channels to deliver the seed to the eastern market.

Unless the last three conditions are fulfilled, the domestic alfalfa seed market for western growers appears to be limited to the prairie region. Similar conditions will need to be satisfied if Canadian growers are to enter foreign alfalfa seed markets.

TOWARD AN EXPANDING, AGGRESSIVE AGRICULTURE

— The Challenge for Marketing Boards



Thomas A. Bennett*

Marketing boards should be capable of taking advantage of each marketing opportunity as it presents itself.

The challenge is to develop and operate marketing organizations with an aggressive market oriented thrust, geared to future growth and development.

INTRODUCTION

Agricultural producers have experimented for years with various organizational systems and marketing tools to improve their income position. Early attempts to coordinate production and marketing through voluntary action generally failed to achieve the degree of control desired. This was primarily due to the inability of voluntary, cooperative organizations to represent all of the producers of a commodity within a particular region. This led to the passage of provincial enabling legislation and the establishment of provincial marketing boards which made compulsory control possible.

Even as intra-provincial coordination of production and marketing evolved, vast improvements in transportation, communication, packaging, processing and farming techniques, coupled with a trend to large volume buying, resulted in a "national market", in which all producers in all areas of the country became competitors. As a result, national legislation¹ was enacted enabling producers to develop marketing organizations of a compulsory nature on a national basis.

The marketing board as an organizational tool gave unprecedented possibilities to producers for the future

growth and prosperity of their commodity industries. The possibilities included the expansion of domestic sales through direct or indirect market and product development and the achievement of greater production and marketing efficiencies. It was also possible through marketing boards, to aggressively develop or seek to influence the development of export markets.

Marketing boards as they were established, were not geared to a market development function but instead performed administrative functions such as administering a multi-price system or establishing quotas for the current year and in some cases bargained for a season price. Whether through a lack of purpose or a failure to recognize opportunities, many marketing boards and agencies may have failed to direct their attention to the future of their industry. In effect, they may have forgotten to invest in the future because of pressures of today.

Today there is a great opportunity and a great need for market organization to enhance efficiency. Marketing boards and agencies can effectively organize their commodity industries to achieve maximum development of markets and influence marketing structure changes in order to minimize the cost of marketing and achieve greater efficiencies throughout the system. Through the right approach, farm net income may be improved while at the same time the future competitiveness of each commodity industry may be enhanced.

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¹The Farm Products Marketing Agencies Act, 1972.

What is needed, perhaps, is a reappraisal of the direction in which marketing boards are going and a close examination of the basic reasons for marketing boards or agencies. It might be advisable for marketing boards now in operation to reexamine their organization and rethink their programs. Marketing boards or agencies in the developmental stages might take stock of a few basic guidelines and considerations before formalizing their organizations.

In this article I shall list and examine some of the guidelines and considerations in the formation of marketing boards or agencies and examine in more detail the question of quotas and the concept of net income improvement.

GUIDELINES FOR MARKETING BOARDS OR AGENCIES

Although the primary objective of earlier marketing boards was to increase producer net income, the present agricultural situation requires a restatement of objectives and a broader scope of activities. If agriculture and its many component commodities are to remain viable and prosper in the future, it may be necessary to adopt additional objectives in which are more tune with the times.

The specific objectives of a marketing boards or agency should be tailored to the specific commodity or the area of operation of the organization. However, some general objectives are common to most marketing boards. In addition to maintaining or increasing the net income position of agricultural producers, marketing boards can seek to enhance stability of production and net income through co-ordinated marketing plans geared to reduce fluctuations in production and marketing. They can also seek to achieve and maintain maximum efficiencies in the marketing of their commodities. To foster long-run growth within the industry they may strive for new product development and market expansion. They may also seek equity among producers to assure that each producer will share in the growth of the industry in relation to his capacity and ability to produce.

To achieve whatever objectives they have set for themselves, it may be necessary for marketing boards to assume a more positive and aggressive philosophy. In essence, they should be capable of taking advantage of each marketing opportunity as it presents itself. They should be aggressively market oriented and aggressive merchandisers of their product and not just sellers or controllers. They could also consider the identification and segregation of the various market segments for their product, such as the fresh, processed and export

segments. An awareness of the needs and wants of buyers and consumers as well as an awareness of the values and attributes of their product should be developed to enable them to achieve an optimum degree of product differentiation.

Activities of Marketing Boards

There are many things that marketing boards or agencies can do and perhaps things that they cannot or should not attempt to do. The range of activities is far wider than any existing marketing board has undertaken and it is unlikely that any board will adopt all of them. However, marketing boards should rethink their present programs and adopt those activities which are more in line with their specific objectives. The following list illustrates the broad scope of specific activities that may be undertaken by marketing boards.

1. They can effectively organize producers into a viable group capable of achieving solutions to their common problems.
2. They can give producers a greater voice in legislative or regulatory matters.
3. They can be instrumental in developing new products.
4. They can be instrumental in expanding present markets and in developing new markets — both domestic and foreign.
5. They can be instrumental in aggressively promoting and merchandising their commodity.
6. They can effectively bargain for improved prices and delivery terms.
7. They can ensure the contracting of realistic volumes of commodities produced under contract.
8. They can be instrumental in the development and adopting of improved grade standards and grading techniques.
9. They can influence supply, directly or indirectly, through contracts or quotas (delivery quotas, marketing quotas or production quotas) with producers.
10. They can influence price indirectly through some form of supply control or directly by establishing minimum prices, maximum prices, price ranges or fixed prices at the farm level, wholesale level or retail level.
11. They can seek to achieve product market price discrimination by controlling the flow of product into two or more differentiated markets.
12. They can provide market intelligence and market information to producers and buyers.
13. They can seek to alleviate chronic fluctuations in supply through co-ordination of production and marketing.

14. They can provide a service to the buyer of the product by pooling and supplying larger volumes of the type or grade of the product demanded.
15. They can assume, to some degree, the functions of marketing, by-passing the established "middlemen" in the marketing channels and passing on to the producer any savings in margins.
16. They can organize and/or influence the marketing structure of the commodity to minimize the cost of marketing throughout the whole system.

The foregoing is only a partial list of the possible activities that marketing boards may undertake. Just as there are activities that marketing boards may undertake, there are also those that marketing boards should not attempt to do.

1. Marketing boards should not attempt to force the price of a commodity to a point beyond which consumers will substitute another commodity or product or will do without the commodity entirely.
2. Marketing boards should not attempt to establish marketable product volumes or prices that would entail the strict prohibition of commodities moving into the protected area to a degree harmful to consumers or the long run position of that commodity.
3. Marketing boards should not attempt to control production and/or marketing to a point where the adoption of new technology is stymied.
4. Marketing boards should not attempt to set inflexible barriers to the movement of the production of a commodity from one region to another region having a greater competitive advantage.

CONSIDERATIONS IN THE ADOPTION OF QUOTAS

Marketing plans often consist of, or eventually adopt, some type of quota system. The basic types of quotas generally utilized are delivery quotas, marketing quotas and production quotas. Delivery quotas are generally established by setting a maximum volume of a product that may be delivered during a specific period. The period may be a day, a week or some other time period and is usually based upon a certain deliverable volume per production unit. A marketing quota is usually a maximum volume of a commodity that may be marketed during a season, regardless of the number of acres planted or the total volume of the commodity actually produced. A production quota, on the other hand, may be a maximum limit on the volume of a commodity that can be produced during a season or a maximum number of units that may be planted or harvested.

The adoption and use of quotas by a marketing board should be preceded by a thorough study of the advantages and disadvantages of their use. Although the disadvantages of quotas may outnumber the advantages, quotas may play a definite part in a marketing boards' over-all marketing plan.

One of the most controversial aspects of quotas, considered by some to be an asset and by others to be a disadvantage, is the increased value of farm resources to the original producers as quotas are capitalized. Other advantages of quotas include a greater degree of stability of production and prices, more stability in the use of factors of production, more stability of farm income and a certain degree of economic security.

Many disadvantages of quotas can be listed. These may or may not be valid in all situations. The capitalization of quotas is often thought to be the greatest disadvantage. Another major disadvantage may be the establishment and maintenance of excess capacity as the result of the imposition of longer term basic quotas and shorter term annual quotas.

The unemployment of resources (fixed inputs) and an increasing upward pressure on the prices of alternative factors of production (variable inputs) are often quoted as major disadvantages. Three other related disadvantages are the possible deterioration of production efficiencies, the protection and maintenance of inefficient producers and the possible inflexibility in adapting new technology. Adjustments in the size of operations (either up or down) may be difficult or impossible due to the necessity of producing to maintain a quota base. Also, quotas may establish barriers to "entry" into the industry, exit from the industry or expansion for producers seeking economies of scale.

Quotas may also create artificial barriers to the movement of an industry to an area of greater competitive advantage. In effect, production patterns may be frozen and industry adjustments based on comparative advantage prevented. Higher prices for farm real estate may result when quotas are tied to the land. High prices to consumers due to increased costs arising from capitalized quotas may also result.

The adoption and imposition of quotas may eventually lead to greater pressures for imposition of new or tighter controls such as levies, import controls and other protectionist forms. Eventually, the major concern of marketing boards or agencies utilizing quotas could evolve into a preoccupation with maintaining the "status quo".

The decision to adopt and impose quotas is a difficult one for marketing boards to make. The advantages and disadvantages should be weighed very carefully. If a quota basis is then determined to be necessary it is recommended that certain guidelines be developed and followed.

Although the situation facing each marketing board may differ there are several guidelines that can be recommended. It is suggested that quotas be the property of the board and be earned through the productive efficiency of each producer. When a producer wishes to expand, his extra quota should be earned on the basis of his performance and not some past historical base. Buying and selling of quotas should be frowned upon. When a producer ceases operation, the quota should revert back to the agency. The quota allocation mechanism should facilitate freedom of entry and exit, both locally and nationally.

A minimum limit to the size of individual quotas may be established even if these have to be increased from time to time to achieve economies of scale. Dominance of certain commodities by a few large producers who take advantage of the existence of quotas must be avoided, especially if no further economies of scale can be demonstrated.

NET INCOME IMPROVEMENT

Improvement of farm net income from a particular commodity may be achieved in a reasonable or rational manner without placing undue burden upon consumers or producers. "In error, some regard 'higher net income' as equivalent to 'higher prices' and attempt to maximize the wrong thing".² Although the most touted path to net income improvement is through direct price escalation, this may not be the most satisfactory method and most certainly not the only method.

Farm net income may be viewed as a function of five basic factors:³

- 1) the volume of the product marketed
- 2) farm production costs
- 3) farm marketing costs
- 4) marketing margins
- 5) consumer price

To achieve improved farm net income it is possible for marketing boards or agencies to direct their activities and marketing strategies to one or more of these five factors.

1. Volume marketed. If one segment of the industry, for example the export market, has a fairly elastic demand, net income may be improved in the aggregate by increasing the volume marketed.
2. Farm Production Costs. An agency may promote and support production research and assist producers in the adoption of new production techniques which will result in lower production costs.
3. Farm Marketing Costs. An agency may be able to achieve savings in farm marketing costs by pooling or by assembling larger quantities for sale and shipment (enhance economies of scale). An agency may also coordinate the distribution of products within and between areas to minimize transportation costs.
4. Marketing Margins. By providing additional services to buyers or assuming certain marketing functions, an agency may be able to pass on to producers some portion of the normal marketing margins. In addition, an aggressive marketing research program may result in improved efficiencies in the marketing channel resulting in lower aggregate marketing margins.
5. Consumer Price. The consumer price may be increased indirectly by pressure on the other factors of the Net Income Equation. Direct emphasis on the farm price without compensating emphasis on the other factors may result in an excessive increase in the price to consumers. In some cases this may be justified and result in very little change in the volume of the product consumed. However, if severe, the accompanying change could result in a smaller volume of the product being utilized and therefore, a decrease in the aggregate net income.

²Canadian Agriculture in the Seventies. Report of the Federal Task Force on Agriculture, December, 1969.

³(1) FNI = VM x (FP - FC)
 (2) FP = CP - MM
 (3) FC = FPC + FMC
 (4) FNI = VM x [(CP - MM) - (FPC + FMC)]
 FNI = Farm Net Income
 VM = Volume Marketed
 FP = Farm Price
 FC = Farm Cost
 CP = Consumer Price
 MM = Marketing Margins
 FPC = Farm Production Costs
 FMC = Farm Marketing Costs

CONCLUSION

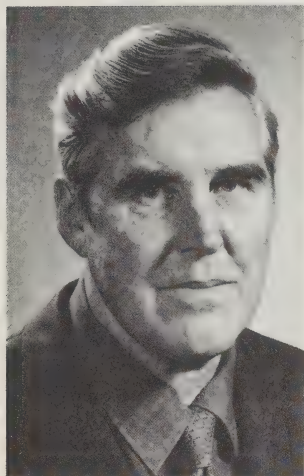
The responsibility of marketing boards or agencies is to be rational in the development and operation of marketing plans to assure not only the improvement of farm net income but to maintain or enhance the competitive position of each commodity industry in both the domestic and export markets. Therefore, the challenge is to develop and operate marketing organiza-

tions with an aggressive market oriented thrust, geared to future growth and development.

Agricultural producers in this country have a unique opportunity, through the use of provincial and national

enabling legislation, to achieve rational control over the production and marketing of their commodities. However, the future depends upon the orientation of each commodity group and how well each develops and upholds its own objectives and marketing plan.

POTATO PRODUCTION COSTS AND PRACTICES IN NEW BRUNSWICK



G.C. Retson*

Since 1951, there has been a downward trend in potato prices in New Brunswick. This combined with steadily rising costs has created a difficult situation for the grower. To meet the problem, growers have increased size, specialization and mechanization of their operations and have cut costs through greater output per worker and per acre.



W.S. Hanlon*

Potatoes are an important segment of New Brunswick agriculture and indeed of the overall economy of the province. During the 1967-71 five-year period the crop had an annual average value of \$15,932,000 at the farm level (Table I) and sales of potatoes accounted for 26 percent of total cash receipts from farming operation in the province. The fact that over three-quarters of the crop is processed or shipped from the province as seed or table stock provides additional income and employment outside the primary agricultural sector.

Since 1951 when the annual average farm price reached a high of \$3.33 per 100 pounds, there has been a downward trend in potato prices in New Brunswick. This trend combined with steadily rising costs has created a difficult situation for the grower. To maintain his competitive position on Canadian and international markets he has had to increase overall efficiency and emphasize aspects of cost reduction and control.

Related information on costs and technical factors influencing costs at the farm level were obtained from a

study conducted by the Research Division of the Economics Branch, Canada Department of Agriculture. This includes an analysis of data secured from 41 potato growers in New Brunswick on their operations for the 1969-70 crop year. Operations studied were located in the commercial potato growing counties of Carleton, Victoria and Madawaska which account for over 90 percent of potato production in the province. Growers were selected at random and ranged in size from 60 to 375 acres with an average of 176 acres per farm in potatoes.

Potatoes grown in New Brunswick are marketed as table stock, seed or through processors. Each market has its specific requirements and these in turn have a bearing on production costs. Nearly all growers in the study shipped potatoes to more than one market and in some cases to all three markets.

Farm sale of potatoes is normally on a delivered basis with the grower bearing the costs of moving the crop from the farm to the processing plant, dealer's warehouse or shipping point. As there may be considerable variation in the volume of potatoes placed in storage and the amount sold, costs were calculated both on a harvested and delivered basis. While the crop is handled and shipped to market in a variety of containers the

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TABLE 1. POTATO ACREAGE YIELD, PRICE AND VALUE, IN NEW BRUNSWICK FOR SELECTED YEARS 1941-71¹

Year	Area acres	Average Farm		Farm Value '000 dollars
		Average Yield per Acre cwt.	Price per Cwt. dollars	
1941	44,100	120.0	1.38	7,321
1951	38,100	150.0	3.33	19,050
1956	46,200	198.0	1.41	12,899
1961	54,200	187.5	0.89	9,044
1966	64,900	222.7	1.05	13,657
1967	62,000	203.0	1.31	13,953
1968	61,000	226.0	1.05	12,656
1969	64,000	206.3	1.95	21,853
1970	61,000	215.0	1.45	16,470
1971	59,400	235.1	1.20	14,728

Source: Statistics Canada, Field Crop Reporting Series Cat. 22-002.

standard unit for both production and farm sale of potatoes in New Brunswick is the 165-pound barrel.

VARIATION IN COSTS

Costs of producing potatoes vary from farm to farm reflecting the managerial ability of individual operators and the quality and amount of resources at their disposal. Production costs reflect the combined influence of a number of factors including yields, efficiency in use of labor and capital and scale of operation. The influence of these and other factors is indicated by data in Table 3 where study farms are classified into three groups on the basis of low, medium and high costs per barrel of field-run potatoes.

YIELDS

Potato yields in New Brunswick, which averaged 218 hundred weight per acre for the five-year period 1967-71, were the highest of any province in Canada and considerably above the national average of 170 cwt. per acre. New Brunswick yields in 1969 at 206 cwt. (Table 1) or 125 barrels per acre were below the 1967-71 five-year average. Growers on study farms indicated that their 1969 yields of 131 barrels per acre were also below average mainly as a result of frost damage at harvest.

As indicated by the data in Table 3, yield was a significant factor in influencing costs. Low-cost farms had yields of six barrels per acre higher than those on the medium-cost farms and 12 barrels per acre higher than on high-cost farms. Yields in turn are influenced by, or associated with, various aspects of organization, management or cultural practices, a number of which are included in the table.

FERTILIZER

Fertilizer, which cost \$57 per acre and ranked next to labor and machinery as the third largest item of potato expenses on study farms, is a major factor influencing yields. In view of the importance attributed to it, it was unexpected to find (Table 3) that variations in potato yields were inversely related to applications and expenditures for fertilizer. All groups applied relatively heavy applications of fertilizer on potatoes. But the farms with

TABLE 2. COST OF PRODUCING POTATOES, 41 FARMS, NEW BRUNSWICK, 1969-70

Item	Per Farm	Per Acre	Per cent
			of Total
		— dollars —	per cent
Growing and harvesting . . .			
Seed	5,945	34	10.3
Seed cutting	384	2	0.7
Fertilizer	10,054	57	17.5
Lime	200	1	0.3
Spray	2,304	13	4.0
Tractor	3,557	20	6.2
Truck and car	2,343	14	4.1
Other machinery and			
equipment	5,163	29	9.0
Land	2,044	12	3.5
Labor	11,367	65	19.7
Interest on operating			
costs	1,777	10	3.1
Miscellaneous	524	3	0.9
Total cost delivered to			
storage	45,671	260	79.3
Storage, grading and			
hauling to market			
Storage	4,587	26	8.0
Storage equipment	707	4	1.2
Truck	1,231	7	2.1
Labor	5,040	28	8.8
Miscellaneous	325	2	0.6
Total storage, grading			
and hauling to market	11,890	67	20.7
Total Cost	57,561	327	100.0
Less returns from cull			
potatoes	542	3	—
Net cost of marketable			
potatoes	57,019	324	—
Cost of field run potatoes . .			
Per 100 pounds	1.52	—	—
Per barrel	2.50	—	—
Cost of marketable potatoes .			
Per 100 pounds	1.74	—	—
Per barrel	2.87	—	—

TABLE 3. — VARIATIONS IN COST OF PRODUCING POTATOES AND THEIR RELATIONSHIP TO VARIOUS ASPECTS OF ORGANIZATION AND MANAGEMENT ON 41 FARMS IN NEW BRUNSWICK 1969-70

Item	Low Cost Farms	Medium Cost Farms	High Cost Farms	All Farms
Number of farms	14	13	14	41
Cost per Acre: dollars				
Seed and seed cutting	33	39	37	36
Fertilizer and lime	58	56	62	58
Spray materials	14	12	13	13
Machinery and equipment	64	72	86	74
Labor	85	92	105	93
Use of land	10	12	13	12
Storage	24	27	27	26
Other	13	17	16	15
Total Cost: dollars	301	327	359	327
Cost per Barrel: dollars				
Field run potatoes	2.20	2.51	2.88	2.50
Marketable potatoes	2.51	2.90	3.32	2.87
Yield per Acre: barrels				
Field run potatoes	137	130	124	131
Marketable potatoes	118	112	107	113
Fertilizer per Acre: pounds				
Total mixture	1,595	1,452	1,643	1,561
N-P-K nutrients	563	571	581	571
Number of sprays	9.9	9.4	9.5	9.6
Acre per Farm: acres				
Potatoes	185	189	155	176
Tillable land	315	287	272	291
Per cent of Crop Marketed as: . .				
Seed	35	44	44	41
Table stock	34	30	37	33
Processing potatoes	31	26	19	26

the lowest applications of fertilizer nutrients had the highest yields while those with highest applications had lowest yields of potatoes.

As potatoes have moved away from their position as a hoed crop in the rotation to one approaching monoculture, commercial growers in New Brunswick have increased applications of fertilizer to the point where they tend to represent a form of crop insurance as well as a factor influencing yields. Where potatoes follow potatoes year-after-year the build-up of mineral nutrients can be carried to the point where excess fertility may depress, rather than increase, yields and quality of marketable potatoes.

The Atlantic Potato Committee recommendations suggest applications with total (N + P₂ + O₅ + K₂O) nutrients ranging from 400 to 480 pounds per acre

depending on whether potatoes are grown following potatoes or in a rotation. In contrast to this, growers in the study applied an average of 571 (157 + 231 + 183) pounds of nutrients on potatoes or about one-fifth more than the upper limit generally recommended. Since potatoes on the study farms usually followed potatoes, the discrepancy would be even greater.

The chief authority for potato fertility recommendations in New Brunswick is the Atlantic Potato Committee which is composed of officials of Provincial and Federal Departments of Agriculture in the Atlantic region. Where a soil test is not available the general recommendation of the Committee is as follows:

¹ Atlantic Potato Committee, 1972, Potato Production Recommendations for the Atlantic Provinces Agricultural Services Coordinating Committee, Publication 700, p. 9.

Area	Condition	Ratio	Nutrients	Example Analysis	Rate
			N P ₂ O ₅ K ₂ O		
			lb/acre		lb/acre
New Brunswick	Rotation	1-2-1	120 240 120	10-20-10	1,200
	Following Potatoes	3-4-3	120 160 120	15-20-15	800

A number of factors have contributed to the conflict between Departmental recommendations and growers' applications of fertilizer on potatoes in New Brunswick. These include low soil pH's (not over 5.4 to control scab) which limit the efficiency of applied fertilizer and increased use of high analysis fertilizers (as on medium-cost farms) without compensating reductions in the volume applied. A further factor is increasing specialization and risk in potato growing. With major dependence on the crop, above average yields are essential for survival. Since fertilizer represents the input most directly associated with maintenance of high yields the result has been an upward trend in applications. Growers noted that until more definite assurance is available that reduced applications will not result in lower yields of potatoes, little reduction in fertilizer applications is anticipated.

The fact that increased applications of fertilizer on study farms were associated with lower yields of potatoes is not necessarily attributable to problems of excess fertility. However, it does suggest that applications have reached the point where factors other than fertilizer are playing a more important part in influencing yields. Furthermore, the possibility of reducing costs, improving quality and minimizing potential pollution problems associated with fertilizer run-off suggest that this is a critical problem on which more research is required.

TABLE 4. CROP PRODUCTION AND LAND USE ON 41 POTATO FARMS IN NEW BRUNSWICK, 1969-70

Crop or Land Use	Acres per Farm
Potatoes	176
Grain	62
Hay	38
Peas	9
Other crops	6
Total tillage land . . .	291
Woods and rough land	199
Total	490

CROP PROGRAMS

As previously noted, fertility requirements for potatoes are influenced by crop programs. Data in Tables 3 and 4 indicate that potatoes accounted for nearly two-thirds of

the tillable acreage on study farms. This would permit a rotation of two years in potatoes followed by one year in other crops and then back to potatoes. In all probability the number of consecutive years in potatoes would be considerably higher since growers tend to plant potatoes on their better land and in their larger fields. With increased mechanization small irregular fields are seldom planted to potatoes and in some cases may not be cropped at all. Increasing size and specialization in potatoes combined with rising land values have also tended to reduce the length of rotations. One grower noted he had grown 19 consecutive crops of potatoes on the same land without any apparent decline in yield or quality.

Many of the soils of the Upper St. John Valley tend to be stony but have good moisture holding capacity. This permits semi-continuous cropping of potatoes, a practice which cuts costs by concentrating the crop in a smaller area and reducing tillage operations compared with those required in the traditional rotation where potatoes were planted on sod. While these advantages are offset to some degree by accelerated soil erosion and problems associated with "volunteer" potatoes which over-winter in the soil, the trend toward shorter rotations and increased specialization in potato production appears to be a continuing one.

Problems associated with specialization frequently give rise to the suggestion that a more diversified type of agriculture should be promoted in potato-growing areas of New Brunswick. In view of their apparent comparative advantage over other enterprises, however, the current trend appears to be toward more rather than less emphasis on potatoes. Within the Atlantic region only the three farm commodities, apples, blueberries, and potatoes, are normally surplus to local market requirements. A number of others, including livestock and livestock products, are highly deficit and supplies must be brought in from outside the region. In contrast to this, Maritime potatoes (which are grown largely in specialized areas within five counties of the region) dominate central Canadian markets and compete successfully on international markets. The fact that potato-growing areas in New Brunswick have advantages in terms of proximity to markets and soils which permit more continuous cropping of potatoes also provides the

basis for a higher degree of specialization in the crop than is found elsewhere in the Atlantic region.

Emphasis on potatoes restricts the amount of land and labor available for other enterprises. The three chief crops other than potatoes on study farms - grain, hay and peas (Table 4) were selected more on the basis of their compatibility with potatoes, rather than their ability to compete with potatoes. Much of the hay or pasture was located on land not well adapted to potatoes. Relatively high land values in these areas also restrict the amount of land available for forage and cereal crops normally associated with livestock production. Since it tends to be a summer operation, specialized cash crop production may conflict with the goal of efficient use of labor throughout the year. Increasing scale and specialization in potato production in New Brunswick is usually accompanied by an increase in the number of marketing functions performed by farm labor. As a result of these and other activities such as the repair and maintenance of equipment, operators of study farms were employed for an average of 41 weeks of the year on potato operations.

TABLE 5. — LIVESTOCK ON 41 POTATO FARMS, NEW BRUNSWICK, 1969-70

Type of Livestock	Number of Farms Reporting	Average Number	
		Per Farm Reporting	All Farms
Cattle	12	32.8	9.7
Hogs	2	6.0	0.3
Horses	2	3.0	0.1

VARIETY

Three main varieties, Kennebec, Netted Gem (certified in the United States as Russet Burbank) and Katahdin, accounted for 92 percent of the potato acreage on study farms. Data on acres, trends and growers' intentions with respect to these and other potato varieties are shown in Table 6.

Grower preference in New Brunswick has traditionally favored high-yielding varieties of potatoes which can be marketed as seed or table stock. With increased emphasis on processing, the current trend appears to be toward triple-purpose varieties which may be sold on all three markets. In line with this, acreage in Katahdin, formerly the main variety grown in the province, has declined while acreage in Kennebec and Netted Gems has increased.

On the basis of future intentions of operators of study farms, it appears that the upward trend in plantings of

Netted Gems will continue while those of Katahdin and, to a lesser extent Kennebec, may decline. Growers' intentions with respect to Pontiac, Sebago, Keswick and the eight other varieties grown in 1969 indicate relatively little change. Of these Pontiac and Sebago are grown mainly for seed while Keswick is grown both for seed and as an early variety. Since movement of New Brunswick table stock tends to coincide with declining supplies of potatoes on central Canadian markets, the major emphasis is on late varieties.

Market demand and flexibility provided the main basis of grower preference for Netted Gems. Other advantages noted were lower seed requirements, freedom from scab and greater depth in the row which provided added protection from frost and sunburn. Grower opinion was divided on the question of yield. Growers planning to increase acreage of Netted Gems noted its more critical requirements but stated they were able to secure good yields of this variety. Growers planning no change or a reduction in Netted Gems found this variety difficult to grow and felt it required too long a season. Many of these growers would continue to emphasize Katahdin whose market deficiencies were said to be offset advantages in terms of yield, keeping qualities, ability to withstand stone damage and in some cases, opportunities for the sale of seed. Analysis of cost data also indicates a number of points which presumably have some bearing on grower variety preference. These include variations in costs of seed, fertilizer and labor associated with certain varieties or types of varieties.

Growers planted an average of 6.3 barrels of Netted Gems at an average cost of \$3.35 per barrel or \$21 per acre for seed. Seeding rates for other varieties (generally referred to as "round whites") averaged 15.1 barrels at a cost of \$2.77 per barrel or \$42 per acre for seed. Lower seed requirements for Netted Gems resulted from seed piece spacing in the row which ranged from 14 to 16 inches for Netted Gems as compared with 6 to 8 inches for round whites. Lower seed costs for Netted Gems were offset to some extent by a higher cost of seed cutting. Round whites were generally cut by machine while Netted Gems were usually cut by hand at a charge of from 50 to 75 cents per barrel. Since 88 percent of the potatoes planted on study farm were Foundation seed, variations in quality of seed did not appear to be an important factor in influencing costs.

Study growers applied an average of 630 (187 + 242 + 201) pounds of fertilizer nutrients on Netted Gems at an average cost of \$63 per acre. Fertilizer applications on other varieties average 535 (139 + 224 + 172) pounds of nutrients at a cost of \$54 per acre. Heavier applications of fertilizer (particularly Nitrogen) on Netted

TABLE 6. — ACREAGE, TRENDS AND GROWERS FUTURE INTENTIONS WITH RESPECT TO VARIETIES OF POTATOES GROWN ON 41 FARMS IN NEW BRUNSWICK, 1969-70

Variety	Area Grown 1969	Trends in Past 10 Years			Growers Future Intentions		
		Had Increased Variety	No Change	Had Reduced Variety	Expect Increase Variety	No Change	Expect Reduce Variety
	acres	—		per cent of farms			—
Kennebec	2,879	20	68	12	7	73	20
Netted Gem	2,748	51	49	—	22	76	2
Katahdin	1,007	—	78	22	—	90	10
Pontiac	199	—	88	12	5	95	—
Sebago	162	2	98	—	—	98	2
Keswick	122	5	88	7	—	100	—
Others(8)	94	2	93	5	2	93	5

Gems reflect grower opinion that fertility requirements for this variety are higher than for round whites. However, the substantial variation in applications suggests that a measure of risk insurance is also involved.

Growers noted that labor requirements for varieties marketed through processors were lower than those sold as seed or table stock. Seed and table stock potatoes in New Brunswick were usually grown, harvested, stored, graded, packed and delivered on car at the dealers shipping point. In the case of processing potatoes, the crop is grown, harvested and stored by the farmer but delivered in bulk as required by the plant. Bulk movement of processing potatoes is a relatively simple operation usually conducted by a two man crew. In contrast to this, movement of seed and table stock is a much more time consuming operation which usually involves a crew of at least six men. In line with this it will be noted (Table 3) that as the percentage of crop marketed through processors increased there was a corresponding reduction in per acre charges for labor.

MACHINERY AND EQUIPMENT

Commercial potato production is characterized as an intensive crop grown on an extensive basis. The operation lends itself to mechanization and charges for machinery and equipment on study farms accounted for 22.6 percent of total production costs, ranking next to labor as the major expense item. Mechanization is also an important factor in scale of operation as the economic unit in potato production is closely related to the acreage of crop that one line of equipment can handle. With its relatively short growing season and late varieties, potato harvesting in New Brunswick frequently becomes a race with fall frosts. Accordingly, harvesting equipment is generally the most critical aspect of mechanization on potato farms.

Over the years the trend has been away from mechanical diggers and hand picking of potatoes to mechanical harvesters. More recently the larger air-vacuum harvesters which further reduced labor requirements and facilitated the movement of potatoes from field to storage have been utilized. The trend was accelerated by above-average prices for potatoes and shortages of labor during the mid-1960's but has slowed down in recent years as a result of low returns from the crop. Since a number of considerations such as the availability of labor and mechanical injury to tubers, as well as costs are involved, the matter is of considerable interest, concern and some controversy among growers.

Of the 41 farms taking part in the study, 16 operated diggers, 16 used mechanical harvesters and 9 had air-vacuum harvesters. Analysis of data by type of equipment indicated considerable variation in charges for machinery and labor but relatively little variation in total production costs (Table 7). The chief variation was in per barrel costs of marketable potatoes which were higher on farms using mechanical harvesters than on those using other types of equipment. Since the shrink from field-run to marketable potatoes was highest on farms using mechanical harvesters it would appear that mechanical injury was a factor contributing to higher costs of producing potatoes on some of these farms. But mechanical injury reflects the combined influence of various factors including inadequacies in operation as well as in the type of harvesting equipment used. Grower comments on this point which emphasized deficiencies on management rather than equipment were supported by the fact that six of the low cost farms (Table 3) used mechanical harvesters.

Growers who had converted to mechanical and air-vacuum harvesters were generally satisfied with the move but noted that a number of problems and capital expenditures over and above the cost of the machine were usually involved. These included enlargement and

TABLE 7. — RELATIONSHIP OF METHOD OF HARVESTING TO COSTS AND OTHER FACTORS, 41 POTATO FARMS IN NEW BRUNSWICK, 1969-70

Item	16 Farms Using Potato Diggers	16 Farms Using Mechanical Harvesters	9 Farms Using Air Vacuum Harvesters	41 Farms
Acres potatoes per farm	166	184	179	176
Growing Costs per Acre: dollars				
Machinery and equipment	51	68	74	63
Labor	76	63	48	65
Other	137	133	127	132
Cost into storage	264	264	249	260
Storage, grading and delivery costs per acre	68	70	63	67
Total Cost per Acre	332	334	312	327
Cost per Barrel: dollars				
Field run potatoes	2.51	2.52	2.45	2.50
Marketable potatoes	2.80	3.00	2.78	2.87
Potato Investment per Acre: dollars				
Machinery and equipment	181	233	276	223
Buildings	147	167	174	161
Land	162	195	163	176
Total	490	595	613	560
Yield per Acre: barrels				
Field run potatoes	132	132	127	131
Marketable potatoes	118	110	110	113

improvement of field layouts and added expenditures for power equipment, stone removal and new storage facilities. Such improvements, it was emphasized, should be made well in advance of the purchase of the harvester. A number of these growers were retaining their diggers as a back-up piece of equipment and would keep them in operation as long as they were serviceable.

Growers operating diggers noted that harvesters reduced labor requirements and related problems but felt this was offset by higher costs for machinery and equipment. By retaining their diggers they had also avoided the heavy capital costs associated with harvesters at a time when returns for potatoes were low. However, most of them felt that rising costs and difficulties in securing labor would eventually force them to convert to harvesters. When this occurred it was hoped that lighter and more efficient equipment would be available.

LABOR

Labor, which averaged \$93 per acre, was the major expense item and accounted for 25 percent of the cost of growing and harvesting potatoes and 42 percent of subsequent charges for storing, grading, packing and moving the crop to the shipping point or processing plants. Operators, whose labor was charged at the rate of

\$90 per week, spent an average of 41 weeks per year on potato operations. Family and hired labor on potatoes (not including potato pickers) average 118 weeks per farm. Despite the substantial increase in the use of harvesters in recent years, 2,964 of the 7,211 acres of potatoes on study farms were picked by hand at an average cost of 26 cents per barrel.

Labor requirements for potatoes vary with the level of mechanization and the operator's combined ability in machine and man management. Labor efficiency to a considerable degree reflects the operator's ability to reduce hold-ups to a minimum and keep machines operating at a rate consistent with cost and quality control. In addition to selection, maintenance, and operation of equipment, this may involve such factors as size and shape of fields, storage, design and other factors which help to reduce time and travel. As indicated in Table 3, low-cost farms were able to produce field-run potatoes at a cost of 68 cents per barrel below that of high cost farms. Two-thirds of this difference in average cost was accounted for by greater efficiency in the combined use of labor and equipment.

STORAGE

Study farms owned or rented storage with a capacity of 150 barrels of potatoes per acre. About one-quarter of

this was a track-side storage with much of the balance located on the growers' farms. Investment in farm-owned storage buildings and equipment averaged \$27,657 per farm or \$157 per acre. Storage costs as shown in Table 2 include depreciation, interest, taxes, insurance, repairs and rental charges.

Over the years investment in potato storage on New Brunswick farms has been increasing steadily and expansion has been particularly apparent following years of high potato prices. Increasing size, mechanization and a tendency for growers to assume added marketing functions have been contributing factors. The need for improved facilities for temperature and humidity control, more rapid movement of potatoes in and out of storage and increasing truck movement of potatoes from farm storage direct to market have also played a part. With increased emphasis on grower requirements there also appears to be a trend away from track-side to

on-farm-storage of potatoes. Relatively few new track-side storages have been built in recent years and a number of dealers noted they would not be replacing some of their older buildings. In addition to the need for better farm storage, dealers noted that with lower site costs and access to lower cost credit, growers have advantages in terms of storage construction. The trend toward expanded and improved farm storage may have some implications for suggested programs of building large centrally located storages as a means of improving market and quality control.

SIZE

Within the size range of study farms (60 to 375 acres in potatoes), the scale of operation exerted influence on charges for some inputs but appeared to be of minor importance in accounting for farm-to-farm variations in total costs of producing potatoes. Large potato enterprises had substantially lower unit costs for

TABLE 8. — RELATIONSHIP OF SIZE OF POTATO ACREAGE TO COSTS AND OTHER FACTORS, 41 FARMS IN NEW BRUNSWICK, 1969-70

	Small Size Farms	Medium Size Farms	Large Size Farms	All Farms
Number of farms	13	14	14	41
Acres potatoes per farm	108	164	271	176
Cost per Acre: dollars				
Seed	31	35	34	34
Spray	12	13	14	13
Fertilizer	58	56	58	57
Use of land	9	10	14	12
Machinery and equipment	83	76	69	74
Labor	104	89	92	93
Storage	24	26	27	26
Other	18	19	17	18
Total cost	339	324	325	327
Cost per Barrel: dollars				
Field run potatoes	2.53	2.48	2.50	2.50
Marketable potatoes	2.85	2.77	2.95	2.87
Yield per Acre: barrels				
Field run potatoes	134	131	130	131
Marketable potatoes	118	115	109	113
Number of sprays	8.5	10.5	9.9	9.6
Potato Investment per Acre: dollars				
Land	134	146	213	176
Buildings	152	165	162	161
Machinery equipment	236	243	204	223
Per cent of Crop Sold as:				
Seed	45	39	40	41
Table stock	40	26	36	33
Processing potatoes	15	35	24	26

machinery and labor. However, this was offset in part by the fact that as acreage increased, yields declined, particularly those of marketable potatoes. Real estate investment on small farms was lower than on the larger farms resulting in lower per acre charges for the use of land and buildings. Small farms also had below average charges for spray (as a result of fewer applications) and the lowest charges for seed. As a result of these compensating factors, increasing size was associated with some reduction in per acre costs, but with little variation in per barrel costs of producing potatoes. However, when farms were grouped on the basis of low, medium and high costs of producing potatoes (Table 3), low cost operation was associated with above average scale of operation both in terms of acres of potatoes and total cultivated acres.

As previously noted, the minimum economic unit in potato production is closely related to the acreage that one line of machinery and particularly harvesting equipment can handle in a normal year. Grower estimates of this unit size ranged from 100 to 150 acres with most of the estimates grouped closely about the mid-point of the range. In view of the importance of mechanization, it was further suggested by growers that increases in acreage should preferably be geared to the capacity of the additional harvester or other equipment required to handle the expanded operation. In line with this, potato acreage on low-cost farms tended to cluster around 125 or 200 acres while that on high-cost farms was more widely dispersed over a range of 65 to 300 acres.

SUMMARY

Since 1951 there has been a downward trend in potato prices in New Brunswick. This combined with steadily rising costs has created a difficult situation for the grower. To meet the problem, growers have increased size, specialization and mechanization of their operations and have cut costs through greater output per worker and per acre. Fertilizer, machinery and labor which accounted for 17, 23 and 28 percent, respectively, or over two-thirds of the total cost of producing potatoes on study farms, were the three major cost items as well as the problem areas in potato production.

Yields of potatoes in New Brunswick are higher than those of the other provinces in Canada and have been increased through applications of fertilizer which on the study farms were about one-fifth higher than the upper limit currently recommended by Researchers and Extension workers. This conflict between technical recommendations and farm practice plus the fact that increasing applications of fertilizer on study farms were associated with lower yields of potatoes suggests that

this is a critical problem on which more specific answers are required.

Since the minimum economic unit in potato production is closely related to the acreage that can be handled by one line of equipment, mechanization (and particularly harvesting equipment) is an important factor influencing scale of operation as well as efficiency of labor and capital. Costs of producing potatoes on farms using diggers and air-vacuum harvesters were quite similar while those on farms using mechanical harvesters were slightly higher.

As acreage in potatoes increased, there was a marked reduction in labor and equipment costs per acre but an increase in the cost of most other inputs involved in producing potatoes. Increasing size was also associated with a decline in the yields of potatoes. However, when farms were sorted on the basis of production costs, the low-cost production was associated with above average scale of operation.

To maximize the efficiency in use of equipment, it is usually recommended that increases in potato acreage should be made in terms of units which will fully utilize the capacity of the additional harvester or other equipment required to handle the crop. In line with this, potato acreages on low-cost farms were closely grouped around units of 125 and 200 acres while those on high cost farms were more widely dispersed throughout a range of 65 to 300 acres. Increasing size and specialization in potato growing areas of New Brunswick reflect the comparative advantage of potatoes over other farm enterprises. The best prospects for diversification on these farms appear to be cash crops compatible with potatoes, rather than livestock enterprises.

Three major potato varieties - Kennebec, Netted Gems and Katahdin - accounted for 92 percent of the potato acreage on study farms. Growers' intentions with respect to future plantings suggest that the acreage in Netted Gems will increase while that in Katahdin and, to a lesser extent Kennebec, may decline. Grower preference in New Brunswick tends to favor multi-purpose varieties that can be marketed as seed, table stock or through processors. Low-cost farms sold about one-third of their crop through processors, while medium and high-cost farms marketed a higher percentage of their crop as seed and table stock.

While the potato enterprise seems to frequently be in trouble, this crop represents one of the most efficient farming operations in the Atlantic region. The fact that Maritime potatoes compete successfully on central Canadian and international markets while production of

most other farm commodities in the region is deficit to local market requirements, suggests a high degree of comparative advantage to this crop. Research and extension programs presumably reflect the relative

potential and problems of various farm enterprises in the region. A related comment of operators of study farms was that their industry merited higher priority than that accorded to it in the past.

POLICY AND PROGRAM DEVELOPMENTS IN CANADA

FARM PRODUCTS MARKETING ACT OF ONTARIO

(Ontario Apple Order)

"The Commodity Board and the Board are each authorized to regulate the marketing of apples in interprovincial and export trade and for such purposes may, with respect to persons and property situated within the Province of Ontario, exercise all or any powers like the powers exercisable by each of them respectively in relation to the marketing of apples locally within that province under the Act and the Plan." (9 January, 1973)

FARM PRODUCTS MARKETING AGENCIES ACT 1970-71-72

(Canadian Egg Marketing Agency Proclamation)

This new agency intends to provide a national supply management program for high quality eggs at fair prices that can minimize the instability associated with the "boom and bust" cycles that has plagued the egg industry in the past.

Quotas are to be assigned to all egg producers in each province. A system for the licensing of persons who are engaged in the marketing of eggs in interprovincial or export trade will be established. The agency may impose levies or charges on the production and/or marketing of eggs. Powers may be exercised to preclude any person from marketing eggs in a province other than the province in which the eggs are produced at a price that is less than the aggregate of the price charged for eggs including any reasonable transportation charges. (19 December 1972)

PRINCE EDWARD ISLAND NATURAL PRODUCTS MARKETING ACT

(Prince Edward Island Hog Order)

"The Commodity Board is authorized to regulate the marketing of hogs in interprovincial and export trade and for such purposes may, with respect to persons and property situated within the Province of Prince Edward Island, exercise all or any powers exercisable by it in relation to the marketing of hogs locally within that Province under the Act and the Plan." (9 January, 1973)

AGREEMENT ON SMALL FARMS DEVELOPMENT PROGRAM

In December 1972, Federal Agricultural Minister Eugene Whelan, and Prince Edward Island Agriculture Minister, Alex Campbell, signed an agreement to implement the Small Farms Development Program in the province of Prince Edward Island. This program will help farmers to develop more profitable farms. The objectives of the agreement are to:

- "facilitate land transfers toward the development of economically viable family farms;
- assist owner-operators of small farms to realize on their equity in their farm holdings."

In January 1973, Federal Agriculture Minister E.F. Whelan and Nova Scotia Minister of Agriculture, Jack Hawkins, also signed an agreement to implement the Small Farms Development Program in the province of Nova Scotia.

CANADA SHEEP MARKETING COUNCIL

The Canada Sheep Marketing Council received legal status December 6 1972. The council is not a marketing board. The Council's chief aim is to provide coordination of marketing efforts within the industry, and to act as a liaison between the sheep industry and the government. The council will also recommend changes to improve returns to sheep producers. Another objective is to examine ways for more efficient use of sheep products, lamb, wool and mutton on the domestic market, and to ensure the dissemination of market and other relevant information.

FOOD SYSTEMS BRANCH FORMED

A new Food Systems Planning and Coordination Branch was formed within the Canada Department of Agriculture, in November 1972. The new branch evolved from Project 75 which is a new federal approach to agricultural coordination and development based on a market-oriented food systems concept. The role of the new branch will be to work with all segments of the agricultural industry, such as producers, processors and distributors and to develop market-oriented plans for various commodities through the planning, development and coordination of programs within Agriculture Canada and other components of the food system.

Correction

Volume 7, Number 5, December 1972

Page 32, column 2, 2nd paragraph under Canadian Wheat Board Act — "*The Board will pay to oat producers \$1.76 per bushel*" should read "*The Board will pay wheat producers \$1.76 per bushel*".

PUBLICATIONS

ECONOMICS BRANCH PUBLICATIONS

AERIS 1972. Agricultural Economics Research Information System, report 3. This is a list of the research that is being done. R.K. Sahi, Ottawa, November 1972. 34p. Pub. No. 72/11.

The Rosthern Region of Saskatchewan. J.W. Channon, H.R. Fast and D.A. Neil. Prairie Regional Studies in Economic Geography, No. 10. Regina, October 1972. 143p. Tables, illus. maps. Pub. No. 72/6.

AGRICULTURE CANADA PUBLICATIONS

Available from the Information Division, Agriculture Canada, Ottawa, Canada, K1A 0C5.

Evaluation of Ornamental Greenhouse Plants. J.H. Crossley and S. Arrowsmith. Ottawa, revised 1973. 23p. Illustrations. Prepared in the Research Station, Sydney, B.C. Cat. No. A53-1457

Selecting, Exhibiting and Judging potatoes. C.H. Peters. Ottawa, 1970. (Reprinted, 1972). 17p. Illustrations. Prepared in the Plant Protection Division. Cat. No. A73-1421. Free.

Root Maggots in Rutabagas, Cabbages and Related Plants in the Atlantic Provinces. D.C. Read. Ottawa, revised, 1972. 8p. Illustrations. Prepared in the Research Station, Charlottetown, P.E.I. Cat. No. A43-1075. Free.

Report of the Canadian Grain Commission. Ottawa, 1972. 49p. Tables, organization chart. Grain production, quality and disposition. Documentation and elevator operations. Cat. No. A91-1/1971. Free.

Managing a Small Poultry Flock. Ottawa, 1973. 13p. Illustrations. Prepared by the British Columbia Department of Agriculture, Poultry Branch and published by Agriculture Canada. Cat. No. A63-1489. Free.

Origin of Livestock Marketed. Monthly report. October 1972. Cat. No. A77-11/42-10. Free.

Canadian Wheat Cargoes. Cat. No. A91-5/1972. Free.

Canadian Durum Cargoes. Cat. No. A91-6/1972. Free. Published by the Grain Research Lab., Canadian Grain Commission, Winnipeg, Manitoba. Quarterly. Polyglot (English, French, German and Spanish). Also English-Japanese version under separate cover.

Soil Capability for Agriculture. Canada Land Inventory. Ottawa. Timmins, Ontario. Map. Cat. No. EM. 64-2/42A. 35¢ per copy.

GOVERNMENT OF CANADA PUBLICATIONS

Available from Information Canada, 171 Slater Street, Ottawa, K1A 0S9.

Waybill Analysis: Carload All-Rail Traffic, 1971. Ottawa 1972. 47p. Tables. Published by the Railway Transport Committee. This report gives the analysis results according to: (a) types of rates, (b) regions of origin and destination, and (c) commodities carried. Cat. No. TT31-1/1971. \$1.00 per copy.

Canada Forests, 1972. Ottawa, 1972. Prepared in the Forest Economics Research Institute. Cat. No. Fo 51-172. Free.

Why all the Fuss About Phosphates? Ottawa, 1972. Illustrations. Cat. No. EM. 37-372. Free.

Daily Agrometeorological Data. Issued by the Atmospheric Environment Service. Ottawa. Monthly. Cat. No. En. 58-7/8. 35¢ per copy, \$3.00 per year.

Federal Farm Credit and Related Statistics, 1972. Farm Credit Corporation. Bilingual. 58p. Tables.

STATISTICS CANADA PUBLICATIONS

Available from the Publications Distribution Unit, Statistics Canada, Ottawa, K1A 0T7.

Shipments of Prepared Stock and Poultry Feeds. Monthly, Bilingual. Cat. No. CS.32-004. 20¢ per copy, \$2.00 per year.

Field Crop Reporting Series. November estimate of production of principal field crops, 1972. Cat. No. CS.22-002. 20¢ per copy, \$4.00 for series of 20 reports.

Production of Eggs. Monthly. Bilingual. Cat. No. CS.23-003. 10¢ per copy, \$1.00 per year.

Apparent per Capita Domestic Disappearance of Food in Canada. Ottawa 1972. Annual. Tables, charts. Prepared in the Agriculture Division. Cat. No. CS.32-226/1971. 25¢ per copy.

Miscellaneous Food Processors. Ottawa 1972. 13p. Tables. Bilingual. Annual census of Manufactures. Pre-

pared in the Manufacturing and Primary Industries Division. Cat. No. CS.32-224/1970. 50¢ per copy.

Railway Transport. Part 5-Freight carried by principal commodity classes. Ottawa 1972. Bilingual. 131p. Tables. Cat. No. CS.52-211/1970. \$1.50 per copy.

Census of Canada. AA-19. Agriculture: Forest Products From Census Farm Woodlots. Ottawa, 1972. 4p. Tables. Cat. No. CS.96-736. 25¢ per copy.

Survey of Production, 1970. System of National Accounts, domestic product by industry. Annual. Bilingual. 37p. Tables, charts. Cat. No. 61-202. \$0.75 per copy.

AGRICULTURAL ECONOMICS RESEARCH COUNCIL OF CANADA PUBLICATIONS

Farm Tax Management Today: Charting a New Course. M.S. Anderson. Agricultural Economics Research Council of Canada. This publication "identifies the burdensome provisions and suggests a number of ways farmers can cope with problem areas. The impact of the tax changes on the farm home, land holdings, basic herds and production quotas, are considered in detail." \$3.00 per copy.

Canada: Growth Potential of the Grain and Livestock Sectors. E. Missiaen and A. Coffing. Study "of the present and future state of Canada's grain-livestock sector".

The Impact on U.S. Agricultural Trade of the Accession on the United Kingdom, Ireland, Denmark, and Norway to the European Economic Community. John Ferris *et al.*, Michigan State University, East Lansing, 1971 367p. \$3.00 per copy. "Using mathematical models and other statistical tools, this examination outlines major developments expected after the United Kingdom, Ireland, Denmark, and Norway join the European Communities: a tendency in Europe towards grain and livestock self-sufficiency; a reduction of beef and veal consumption in the applicant countries; a decrease in the supply of milk, beef, pork, and cereals; and an increase of supply over demand, diminishing export opportunities for third country suppliers. Alternative trends for hypothetical non-entry are supplied by way of contrast."

FAO, OECD AND UN PUBLICATIONS

Group Farming. This publication "deals with the most complete forms of association between farms aiming at producing in common. This type of association,

although relatively recent, has developed nevertheless to a sufficient extent, particularly in France and Spain, as to permit a first assessment of its achievements to be presented". February, 1972. 52p. \$1.50 per copy.

OECD Agricultural Review. April 1972. 32p. \$0.75 per copy.

Aid to Agriculture in Developing Countries. "A first attempt at an analysis of agricultural assistance policies of member countries of the OECD Development Assistance Committee (DAC) and those of international assistance organizations." July 1968. 184p. \$5.00 per copy.

Agricultural Projections for 1975 and 1985. Europe, North America, Japan, Oceania. Production and consumption of major foodstuffs. October 1968. "An attempt to quantify the food supply and demand situation in 1975 and 1985 on the basis of demand trends and the factors affecting them." 130p. \$4.00 per copy.

Food Marketing and Economic Growth. May 1970. "A study on the transportations of the food marketing sector as a result of economic growth and of the consequence of these changes in agriculture itself." 132p. \$3.00 per copy.

The Market for Beef and Veal and its Factors. "Trends between 1955 and 1964. Compilation of statistics for 1970. Analysis of the factors influencing production and consumption." 110p. \$3.00 per copy.

The Management of Agricultural Research. November, 1970. "Study of the methods currently available to research administrators allowing them to rise economic criteria in decision making. These can be classified broadly as committee methods, cost/benefit-analysis, and budget programming methods." 176p. \$3.75 per copy.

OTHER PUBLICATIONS

Agricultural Statistics report, 1971. Market and Statistics Branch, Department of Agriculture, British Columbia. 7p. Tables.

Spectral and Cross-Spectral Analysis of Cattle and Hog Sectors, Canada and Regions. S.N. Kulshreshtha. Department of Agricultural Economics, University of Saskatchewan, Saskatoon. December, 1972. 53p. Tables, charts. Tech. Bull. BL: 72-18.

A Hundred Years in the Dairy Industry. V. McCormick. Ottawa, 1968. 205p. Illustrations.

The numbering system for Canadian Farm Economics has been changed to coincide with the calendar year. There will be no Volume 7, Number 6 as the February 1973 issue of Canadian Farm Economics is numbered Volume 8, Number 1.

IN REPLY TO AUTHORS AND EDITORS REGARDING FEBRUARY 73
CANADIAN FARM ECONOMICS

I have read the following article(s):

- (1) Determinants of change in Canadian Beef Cattle Slaughter
- (2) Toward an Expanding Aggressive Agriculture – The Challenge for Marketing Boards
- (3) Alfalfa Seed Production
- (4) Potato Production Costs and Practices in New Brunswick

My Comments are on article number

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Because (e.g., The most important economic and social factors were studied. The work was well documented and the conclusions were useful to me).

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NUMBER 2

APRIL 1973

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Canadian Farm Economics is published bi-monthly by the Economics Branch, Canada Department of Agriculture, Sir John Carling Building, Ottawa, and is based on material prepared by economists of the Economics Branch.

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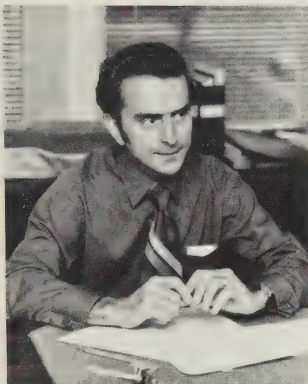
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INSTABILITY IN THE HOG-PORK INDUSTRY



The objective of a hog stabilization program is the reduction or amelioration of the effects of extreme, irregular and cyclical fluctuations.

Trend, cyclical variation, seasonal variation and irregular variation are the four broad categories of variation in a variable.

D.A. West*



H.W. Smith*

INTRODUCTION

Stabilization in the hog-pork industry is currently receiving considerable attention. Wide fluctuations in prices, production and income are common in this sector. Annual changes in hog prices, marketings and receipts often exceed ten percent (Figure 1). In addition, appreciable changes in the same direction are experienced in successive years.

The current problem is to achieve greater stability in order that growth, efficiency and equity in the industry can also be increased. A number of proposals for achieving these goals have been made. Most of the proposals involve stabilization payments from the government or a producer-government fund. These proposals require selection of a base price, a support price, a contributory level (if any) and a support period. Careful consideration of the types and magnitudes of fluctuations in prices, production and incomes is required if this, or any other type of program, is to be effective in both achieving its stabilization goals and in contributing to other goals of the industry and the economy.

The purpose of this article is to provide measures of the several types of variation which characterize the industry. Each source of variation and its relevance to the stabilization problem are first reviewed briefly.

TYPES OF VARIATION

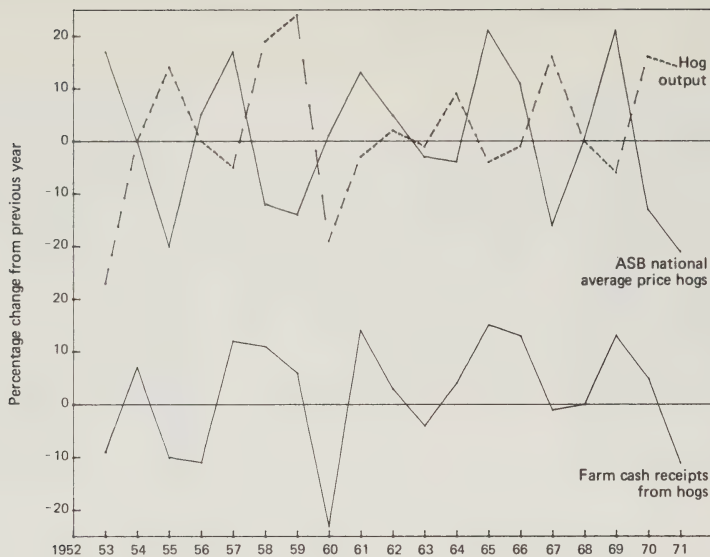
There are four broad categories of variation in a variable such as price, production or income. These are as follows:

1. trend, the long term direction of change;
2. cyclical variation, a more or less normal year to year change;
3. seasonal variation, a more or less normal within year variation; and
4. irregular variation, that variation remaining after the preceding three have been removed.

The factors giving rise to each of these types of variation in a time series depend on the series being studied. For example, an upward trend in production would probably reflect expanding demand, while an upward trend in prices could be due to increasing costs. Cyclical variation in production results from a number of factors, including difficulties in predicting price levels and the time required for production to respond to changes in price. The seasonal pattern of production is largely the result of normal variation in costs of production over the year including the way the swine enterprise fits into the overall crop and livestock system. Irregular variation in

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ANNUAL CHANGES IN HOG PRICES, OUTPUT, RECEIPTS



Sources: Hog output (slaughter plus live exports) — Livestock and Animal Products Statistics, Cat. No. 23-203 Statistics Canada.
 Cash Receipts—Farm Cash Receipts, Cat. No. 21-001, Statistics Canada.
 National Average Price — Agricultural Stabilization Board.

FIGURE 1

HOG PRICES, INDEX 100 OR EQUIVALENT, TORONTO



FIGURE 2

SEASON VARIATION IN HOG PRICES, INDEX 100 OR EQUIVALENT, TORONTO

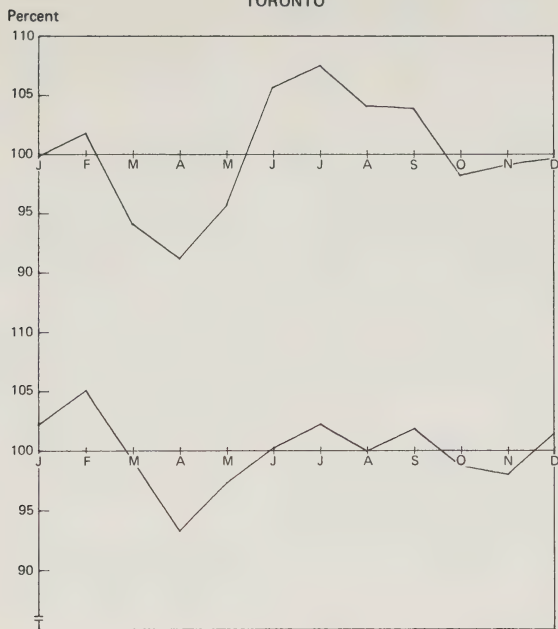


FIGURE 3

AVERAGE WEEKLY HOG GRADINGS BY MONTHS, CANADA

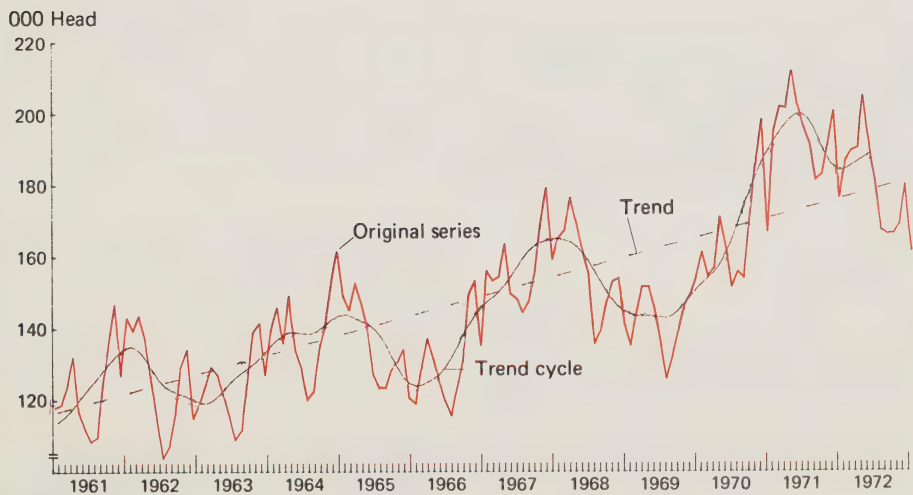


FIGURE 4

production could occur as a result of disease or large fluctuations in feed costs caused by changes in grain export demand, weather, etc. Large irregular changes could mask or stimulate cyclical variation. Irregular variation is the major source of uncertainty in price, production and incomes.

The objective of a stabilization program is the reduction or amelioration of the effects of extreme, irregular and cyclical fluctuations. Trend is important to a stabilization program only insofar as it might affect the relevance of base values or be affected itself by the program. Seasonal variation is likewise important, but only if the support period is less than one year.

MEASURES OF THE DEGREE AND SOURCES OF VARIATION

The various types of variation in prices, gradings and receipts were measured using a computerized moving average technique¹. In those cases where trend was important, it was measured using linear regression analysis and removed from the data prior to measuring the other sources of variation.²

HOG PRICES, TORONTO³

Total Variation

During the period January 1965 - June 1972, the highest average monthly price for index 100 hogs was \$41.96 (February 1966) and the lowest was \$22.82 (April 1971), a range of \$19.14 per hundred pounds dressed weight⁴. The average price during the period was \$31.81

¹Shiskin, Julius, Allan H. Young and John C. Musgrave. The X-II Variant of the Census Method II Seasonal Adjustment Program. Tech. Papers No. 15, Bureau of the Census, U.S. Department of Commerce, Revised February 1967.

²The method used was to subtract the trend from the original observations and apply the "multiplicative" seasonal adjustment program. Therefore, the assumption was, that the relationship among the various sources of variation was

$$Y = T \times (C, S, I)$$

where Y = observed value

T = trend component

C = cyclical component

S = seasonal component

I = irregular component

Alternative assumptions would have been that all components were either additive or multiplicative. Preliminary analysis of hog gradings at the national level indicated little basis for choice among assumptions. No detailed analysis was done to select the most appropriate alternative.

³A national weighted average price by months was not readily available.

⁴Prices for Grade A hogs were converted to Index 100 equivalent by multiplying them by 0.971429.

with a standard deviation of \$4.33.⁵ This means that approximately 47 percent of the monthly prices deviated from the average by more than ± 10 percent of the mean, and about 14 percent of the monthly prices fell outside a range of ± 20 percent.

Trend-Cycle

Of the total month-to-month variation during the January 1965 - June 1972 period, 29 percent was due to cyclical-trend variation. Since little trend in price is evident during this period (Figure 2), virtually all of this amount can be ascribed to cyclical variation. Over the longer period, January 1961 - December 1972, some upward trend is apparent⁶. The difference in average prices over the January 1961 - December 1964 and January 1965 - June 1972 periods was about \$4.40. However, hog prices deflated by the index of all farm product prices show little trend; deflated by farm input prices or the consumer price index they trend downward⁷.

Since 1965, the amplitude of the cycle has been appreciably larger than it was in the early 1960's (Figure 2). An approximate period of three to four years in the cycle is evident.

Seasonal

The degree and pattern of seasonal variation has been changing. The seasonal patterns for 1961 and 1971 pictured in Figure 3 reflect the "expected" seasonal movements for each year, not the particular monthly values of each year. The previous summer peak in prices has all but disappeared. February now has the highest price levels. April is still the month with lowest prices. February prices average five percent above and April prices average seven percent below the annual average. During the January 1965 - June 1972 period, seasonal variation accounted for 51 percent of all month-to-month variation.⁸

⁵Assumes prices were "normally" distributed about their mean.

⁶The estimated relationship between price and time (months) was as follows (standard error in parenthesis): $P_t = 27.45 + 0.046T$ (0.009) $R^2 = .17$.

⁷Between 1961 and 1971, the index of farm product prices increased 15 percent. The index of farm input prices increased 35 percent and the consumer price index increased 33 percent. The most relevant deflator would depend on the objectives of the program.

⁸The percentage of total variation due to seasonal factors depends on the span of time considered. In this series, for example, only 27 percent of variation on a three month average to three month average basis was seasonal. In the gradings series, however a larger degree of variation was seasonal on spans up to four months than on the one month span.

Irregular

During the January 1965 - June 1972 period, irregular variation in prices accounted for 20 percent of the month-to-month variation and one percent of the year-to-year (12 month span) variation. This irregular variation is the major source of difficulty in predicting hog prices.

HOG GRADINGS - CANADA, EASTERN AND WESTERN

Total Variation

During the January 1961 - June 1972 period, hog gradings ranged from 105.3 thousand head per week in July 1962 to 202.4 thousand in February 1971. The average weekly level was 147.8 and the standard deviation 24.7 thousand head (monthly basis).⁹

Gradings in Eastern Canada averaged 89 thousand head per week with a standard deviation of 12 thousand (monthly basis). The corresponding figures for Western Canada were 59 and 15 thousand head, respectively. In other words, Western Canada is subject to a greater degree of variation in production than Eastern Canada.

Trend

Between 1961 and 1972 average weekly hog gradings in Canada increased approximately 490 head per month (Figure 4). The rates of increase in Eastern and Western Canada were 220 and 250 head, respectively (Figures 5 and 6).¹⁰

After removal of trend, appreciable variation remained in each series. Approximately 33, 27 and 60 percent of the observations deviated from their trend value by more than ± 10 percent for Canada, Eastern Canada and Western Canada, respectively and five, three and 29 percent deviated more than ± 20 percent.¹¹ This variation about the trend is of primary concern to a

⁹ The data analyzed were the average weekly gradings by months. In this sense, the analysis is on a monthly basis. The weekly averages were used to standardize the length of month.

¹⁰ These trend values were estimated using linear regressions on monthly data. The estimated functions were (standard errors in parentheses):

Canada	$Y_t = 114.2 + .49T$	$R^2 = .63$
	(.033)	
East	$Y_t = 74.0 + .22T$	$R^2 = .55$
	(.016)	
West	$Y_t = 41.2 + .25T$	$R^2 = .47$
	(.023)	

¹¹ The coefficient of variation was 10.2, 8.8 and 19.5 percent for Canada, Eastern Canada and Western Canada, respectively. A nonlinear trend function probably would have explained a larger degree of variation in the West (Figure 6).

stabilization program. The following sections describe this variation in each series.

Cycle

Over the 11½ year period January 1961 - June 1972, cyclical variation accounted for 92 percent of the annual variation about the trend at the national level, 88 percent in Eastern Canada, and 95 in Western Canada. On a month-to-month basis, the corresponding values were three, two and five percent. A three year cycle is evident in the national and Western series (Figures 4 and 6) while the cycle in Eastern Canada is less regular (Figure 5).

Seasonal

The seasonal pattern of gradings changed little over the period, but the degree of seasonal variation decreased appreciably. Gradings typically fell from relatively high levels in the first five months of the year to seasonal lows in July and August. November is also a month of relatively high marketings.

About 72 percent of the month-to-month variation in Canada was due to seasonal factors. Seasonal factors accounted for less of the total variation in the West than in the East. This seasonal pattern of gradings reflects the seasonal pattern in farrowings. Note that while the seasonal pattern of gradings and prices are generally inversely related, gradings appear to be more strongly influenced by seasonal factors.

Irregular

On a month-to-month basis, 25 percent of the variation in gradings at the national level were classed as irregular; on a 12 month basis eight percent of the variation was irregular. Gradings in Western Canada were highly irregular on a month-to-month basis (31 percent) compared to Eastern Canada (20 percent). Annually, however, the reverse was true (five and twelve percent respectively).

RECEIPTS - EASTERN AND WESTERN CANADA

Receipts from the sale of hogs are not reported on a monthly basis. In order to obtain monthly series which would reflect variability in producer receipts by region, regional hog gradings were converted to warm dressed weight and multiplied by market prices. Index 100 prices at Toronto and Edmonton were used for Eastern and Western Canada, respectively.

AVERAGE WEEKLY HOG GRADINGS BY MONTHS, EASTERN CANADA

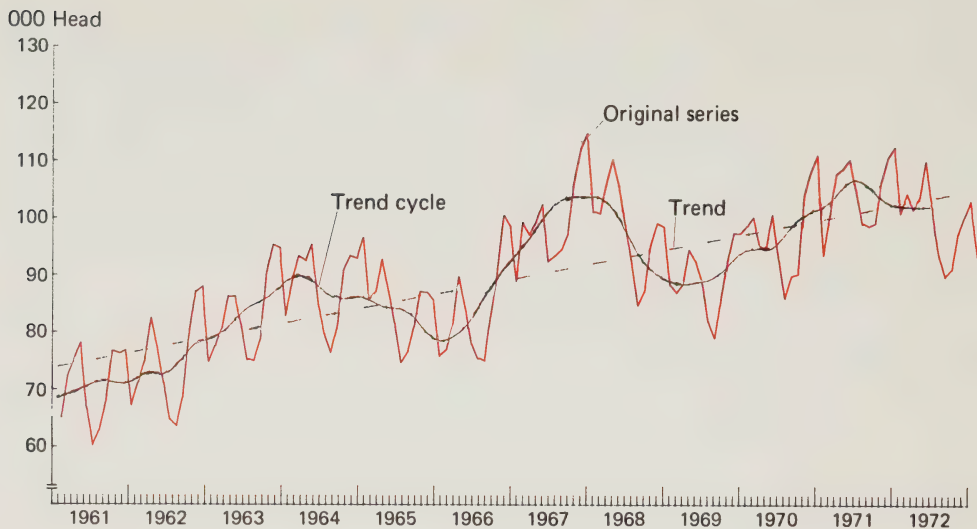


FIGURE 5

AVERAGE WEEKLY HOG GRADINGS BY MONTHS, WESTERN CANADA

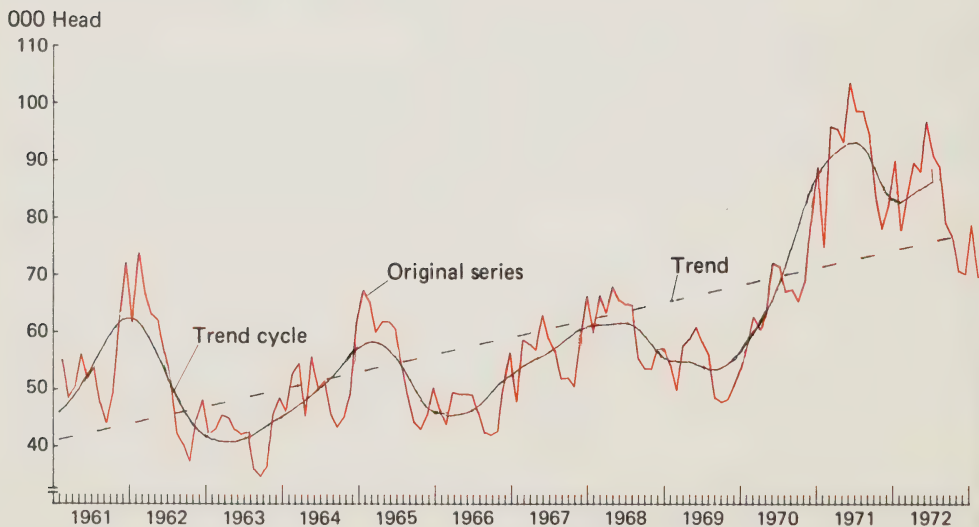


FIGURE 6

ESTIMATED HOG RECEIPTS IN EASTERN CANADA

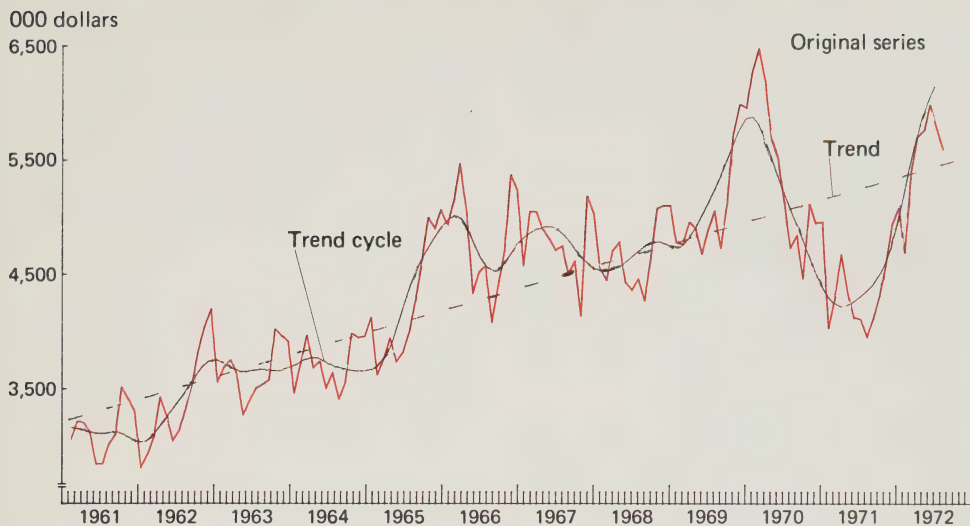


FIGURE 7

ESTIMATED HOG RECEIPTS IN WESTERN CANADA



FIGURE 8

Trend

During the 1961-1972 period the average weekly increase per month was \$16.3 thousand and \$13.2 thousand in Eastern and Western Canada, respectively (Figures 7 and 8). These estimates corresponded closely to an estimated national trend value using reported annual data on farm cash receipts from swine.¹²

Approximately 40 and 48 percent of the monthly estimates of receipts were more than ten percent above or below their trend values in Eastern and Western Canada respectively and nine and 16 percent of the values deviated more than ± 20 percent.¹³ For Eastern Canada the estimated variation about trend in receipts is appreciably greater than the estimated variation about trend in gradings. The reverse is true for Western Canada.

Cycle

During the 11¹/₂ year period analyzed, cyclical variation accounted for 89 percent of the year-to-year variation in Eastern Canada and 78 percent in Western Canada. On a monthly basis, the corresponding percentages were eight and three. The revenue cycle in Eastern Canada was

inversely related to the gradings cycle over the period. This inverse relationship was apparent in Western Canada only in the last half of the period.

Irregular

Irregular factors were a major source of variation in both regions. Approximately 43 percent of the month-to-month variation in the East was irregular; 60 percent in the West. On an annual basis the respective estimates were ten and 22 percent. These estimates of irregular variation reflect the degree of income uncertainty facing hog producers.

Seasonal

Seasonal variation accounted for 49 and 37 percent of month-to-month variation in the Eastern and Western regions, respectively. The seasonal pattern changed somewhat over the period in both regions. Currently, February and November are the months with the highest receipts in both regions. Receipts are about ten percent below average in June and July in the East while August and September are the months with lowest receipts in the West.

CONCLUDING COMMENTS

Several producer groups and government organizations are working on proposals designed to reduce instability in hog producer incomes and alleviate the effects of price and production instability on incomes and exports. This article summarizes one approach to measurement of the sources and degree of instability in the Canadian hog industry. Other methods of measurement could be used and the application of the findings to a specific program is not illustrated. Knowledge of typical seasonal, cyclical, and irregular variations should be helpful in making decisions with respect to the base price, support price, contribution level, support period and the many other factors which must be considered in establishing any type of stabilization program.

¹² On an annual basis, the estimated average and trend values for Canada were \$359 million and \$18.4 million, respectively. The average annual value of Statistics Canada's estimate of farm cash receipts from the sale of hogs was \$384 million and the linear trend estimate was \$18.3 million.

The estimated functions for Eastern and Western Canada (estimated monthly data, thousand dollar units) and for Canada (Statistics Canada annual data, million dollar units) are:

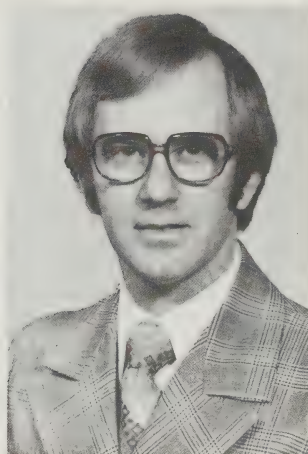
East:	$I_t = 3236.6 + 16.26T$	$R^2 = .62$
	(1.097)	
West:	$I_t = 274.3 + 18.29T$	$R^2 = .87$
	(2.417)	
Canada:	$I_t = 1613.9 + 13.17T$	$R^2 = .68$
	(.772)	

¹³ After the trend was removed, the coefficient of variation was 11.7 and 14.2 percent in Eastern and Western Canada, respectively.

AN APPROACH TO THE MARKET REGULATION OF BROILER CHICKEN MEAT

The impact on stabilizing and/or improving broiler chicken producer returns within a given framework of market demand was favourable using a volume strategy as well as a price strategy of supply management.

The volume strategy appeared to be the better alternative when inventory, price and market development options were compared.



N.L. Longmuir*

INTRODUCTION

Producer marketing boards are common entities in Canada and there is some speculation that a National Agency is desirable for poultry meats. This article reviews part of an analysis conducted in the context of a regulated market based on the assumption that the various poultry boards coordinate their efforts to regulate the market on a national scope. The analysis indicated that a substantial improvement could result through a "group action" setting. The impact on stabilizing and/or improving producer returns within a given framework of market demand was favourable using a volume strategy as well as a price strategy of supply management¹.

Increasing concern was expressed during 1970 and 1971 about low broiler chicken prices to producers and the allocation of markets among provinces which lead to the 'chicken and eggs' war of the 1970's. Since then, producer prices have improved substantially due to various market conditions. However, one major reason

for improved producer prices was probably the agreement to attempt to resolve market regulation problems by the various boards.

If producer marketing boards for broiler chickens should desire to stabilize price and/or quantity in some manner (supply management), then seasonal (within the year) measures of demand would be needed². Moreover, a market regulation strategy would be necessary to regulate the market in order to stabilize and/or increase producer prices within the given framework of market demand.

SEASONAL DEMAND VARIATION

Demand in this article is defined as the quantity of broilers that buyers will take at a given price in a given market (Canada) at a given time (a certain month). Demand increases if buyers will take more at a given price than in a previous month or if they will pay more

¹Supply management means the centralized control over quantity and/or price of the regulated product of specific quality from a specified group of producers to a particular market or markets in a given time period.

²A review of the given demand analysis can be found in N.L. Longmuir "Market Regulation of Agricultural Products in Canada: The Case of Poultry Meats", unpublished Masters Thesis, the Department of Agricultural Economics, University of Manitoba, October 1972, pp. 49-55.

*Nelson Longmuir is an Outlook economist with the Marketing and Trade Division of the Economics Branch. This article is based on his Master's thesis: "Market Regulation of Agricultural Products in Canada: The Case of Poultry Meats", the Department of Agricultural Economics, University of Manitoba, October 1972.

for a quantity than in a previous month. Demand decreases if buyers will take less at a given price or if they will not pay as much for a given quantity.

By 'group action' strategy of stabilizing and/or increasing total revenue at least two alternative strategies are possible. The first option that the various boards could invoke would be volume regulation at a constant level throughout the year and allowing the price to adjust to clear the market, other things being equal. The quantity slaughtered would be stabilized, but the price would fluctuate within the year. However, a simple price pooling mechanism could be introduced to stabilize price.

The alternative option that the boards could choose would be to regulate the price at a constant level throughout the year and allow the quantity to adjust to clear the market, other things being equal. In order to determine what level to regulate quantity or price, the 'group action' only needs to agree on a level that would stabilize and/or increase total revenue. The month that approximated the yearly average quantity slaughtered was chosen for illustrative purposes.

The graphical illustration used in this study was adapted from a study by Darley³. It illustrates the changing level of demand relative to the base month. Figure 1, for example, illustrates the implications of what could be expected to happen to the price (quantity) when the quantity (price) is held constant at the base month throughout the year. The vertical axis of the graph represents the fixed level of quantity at the base month and cuts the monthly demand equations to yield the market clearing prices. These prices were then converted to percentage differences from the base month to indicate the degree of fluctuation on a percentage basis. Similarly the horizontal axis represents the price level held constant and cuts the monthly demand equations at the market clearing quantities. The quantities were converted to percentages to illustrate the degree of fluctuation of quantity marketed on a percentage basis. Figures 1 and 2 illustrate the price-quantity relationships within a given framework of demand under supply management regulation for broiler chickens during 1971 and 1972.

IMPLICATIONS OF DEMAND AND TOTAL REVENUE FOR MARKET REGULATION

Basic economic theory indicates that short run total revenue is maximized when the marginal revenue equals

zero and that demand is unit elastic. If the demand is unit elastic, the price flexibility is equal to one.⁴ If the price flexibility coefficient is greater than one, demand is inelastic and if it is less than one, demand is elastic. In other words, if the price flexibility is less than one, total revenue can be increased. However, when the market is imperfect, economic theory implies that producers operate where marginal revenue equals marginal cost in order to maximize profits rather than total revenue⁵.

Under market regulation, the basic objective of producer marketing boards is to stabilize and/or increase price. Since producer boards regulate the quantity marketed to improve the price and revenue position, one could assume that maximum total revenue is unattainable, but that increased total revenue is possible. This would also imply that we are operating in the elastic portion of the demand curve. In the case of broiler chicken meat, Lee obtained a price flexibility of -0.267.

The low magnitude of the price flexibility coefficients indicates that the quantity marketed, if unregulated, would be highly responsive to a one percent change in price. Or in other words, a one percent change in the quantity of broiler chickens slaughtered would be associated with a -0.26 percent change in broiler chicken prices. On the other hand, the low price flexibility coefficient could also be an indication of the degree of instability that would prevail in the industry without market regulation.

USE OF MONTHLY DEMAND ESTIMATES UNDER SUPPLY MANAGEMENT

If the quantity slaughtered had been held constant at the June level of 2.04 pounds per capita throughout the 12 months, other things being equal, the monthly prices would have been adjusted to the appropriate monthly levels according to the demand specifications of broiler chicken meat and would give the results found in Table 1, column 2. When the fixed quantity was greater than the actual quantity demanded, the price declined according to the demand specifications. Likewise, when the fixed quantity was less than the actual quantity demanded, the price increased. The price fluctuated between 13.54 (18.01) and 16.96 (22.56) cents per pound when the quantity slaughtered was fixed at 2.04 pounds per capita per month.⁶ The estimated total

⁴R.J. Foote, *Analytical Tools for Studying Demand and Price Structures*, U.S.D.A. Handbook 146, Washington D.C. 1958.

⁵R.H. Leftwich, *The Price System and Resource Allocation*, (Third Edition), New York: Hart Rinehart and Winston, 1966.

⁶Values in parenthesis are current dollar values and can be calculated using conversion values found in Table 3.

³R.D. Darley "Monthly Price Estimating Models for Broilers", unpublished Ph.D. Thesis, Purdue University, 1961.

SUPPLY MANAGEMENT PRICE-QUANTITY RELATIONSHIPS FOR BROILER CHICKEN 1971

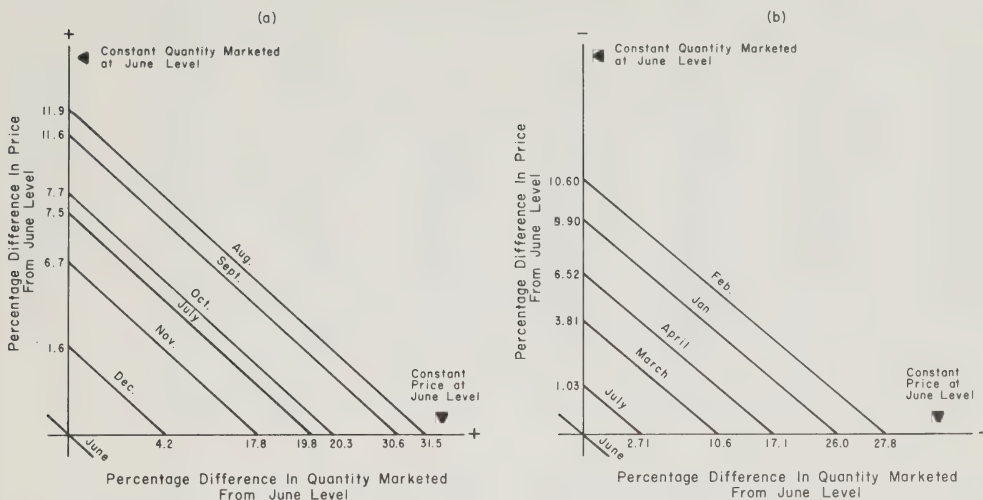


FIGURE 1

SUPPLY MANAGEMENT PRICE-QUANTITY RELATIONSHIPS FOR BROILER CHICKEN 1972 FORECASTS

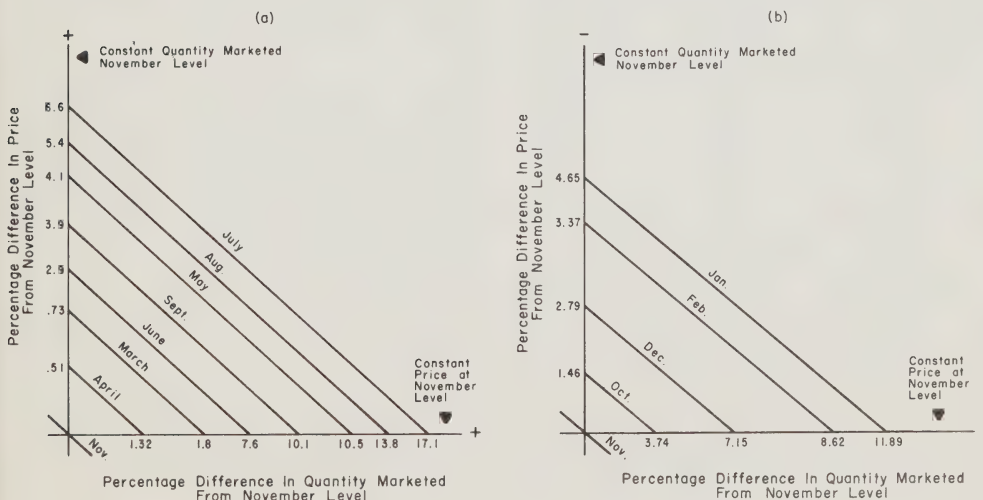


FIGURE 2

TABLE 1. SUPPLY MANAGEMENT RESULTS FOR BROILER CHICKEN 1971^a

	Actual Price	Estimated Price ^a	Actual Quantity	Estimated Quantity ^c	Actual Total Revenue	Estimated Total Revenue ^b	Estimated Total Revenue ^c
	— — — — ¢/lb. — — — —		— — — — p.c. — — — —		— — — — \$000 — — — —		
January	14.15	13.65	1.9755	1.5101	5983	5966	4897
February	14.01	13.54	1.8251	1.4725	5487	5934	4787
March	14.19	14.57	2.1587	1.8369	6590	6401	5987
April	14.34	14.16	2.0115	1.6913	6222	6237	5527
May	14.76	14.90	2.0227	1.9552	6456	6581	6405
June	15.15	14.99	2.0419	1.9865	6706	6637	6524
July	15.45	16.29	2.1749	2.4468	7303	7230	8057
August	15.42	16.96	2.1586	2.6856	7253	7549	8866
September	15.51	16.91	2.0320	2.6669	6885	7544	8826
October	15.30	16.32	2.0566	2.4576	6891	7299	8154
November	15.03	16.18	2.1338	2.4070	7009	7254	8007
December	14.96	15.29	1.9502	2.1278	6421	6918	7095
Year	14.87	15.33	24.5314	24.5028	79211	81556	83137

^aDeflated values, 1961 = 100^bWith quantity held constant at June level of 2.04 lb./capita.^cWith price held constant at June level of 15.15 ¢/lb.

revenue when the quantity slaughtered was held constant was 81.5 (108.9) million dollars. The total per capita demand was 24.50 pounds which indicated that demand would have been decreased for the year.

If the price had been held constant at the June level of 15.15 (20.25) cents per pound throughout the year, other things being equal, the monthly quantities slaughtered would have been expected to adjust to the appropriate monthly levels specified by the demand equation. When the fixed price was greater than the actual price, the quantity demanded decreased according to the demand specifications. Likewise, when the fixed price was less than the actual price, the quantity slaughtered increased. The quantity slaughtered fluctuated between 1.47 and 2.68 pounds per capita when the price per pound was fixed at 15.15 cents per pound per month and the estimated total revenue was 83.1 (111.1) million dollars (Table 2). The total per capita slaughter associated with the June price constant strategy was 24.50 pounds which indicated that when the price increases the quantity demanded declined for the year. Figure 1 illustrates the price-quantity relationships for 1971.

Figure 1 (a) shows that in August, for example, an estimated 31.53 percent more broiler chicken could have been marketed than in June at the June price of 15.15 cents per pound. Or if the quantity marketed in August had remained constant at the June level of 2.04 pounds per capita, price could have been an estimated 11.98 percent higher. Similarly, for example, if prices had been

stabilized (note the horizontal line in Figure 1), an estimated 14.8 percent more broilers could have been marketed in July, than in June. If the objective of the boards had been to stabilize the amount of broilers (note the vertical line in Figure 1 (a) and (b)), broiler prices would have averaged about 7.5 percent higher in July. In December, 4.2 percent more broilers could have been marketed at the stabilized June price level, or the price would have increased 1.6 percent had the quantity been stabilized at the June level.

Figure 1 (b) shows that in the months of January, February, March, April and July, the percentage change in price from the June level decreases (when the quantity marketed is stabilized) by 27.88, 26.04, 17.17, 10.63 and 2.71 percent respectively. Alternatively, when the price was stabilized at the June level the quantities marketed decreased by 10.60, 9.90, 6.52, 3.81 and 1.03 percent respectively.

The total revenue increased by about 4.9 percent when the price levels were stabilized at the June level of 15.15 cents per pound. Alternative stabilization by quantity, held constant at the June level of 2.04 pounds per capita, resulted in a 2.8 percent increase in total revenue for broiler chickens. It would appear that price stabilization would yield more total revenue.

FORECASTING 1972 SITUATION

One way of evaluating the theory and method of estimation in the broiler chicken econometric model is

TABLE 2. SUPPLY MANAGEMENT RESULTS FOR BROILER CHICKENS 1972 FORECASTED^a

	(Forecasted) Price	Estimated Price ^b	(Forecasted) Quantity	Estimated Quantity ^c	(Forecasted) Total Revenue	Estimated Total Revenue ^b	Estimated Total Revenue ^c
	-----¢/lb-----		-----lbs. p.c.-----		-----\$000-----		
January	14.57	14.34	2,0050	1,8375	6471	6626	6123
February	15.21	14.53	1,8460	1,9056	6257	6755	6388
March	14.90	15.15	2,1761	2,1246	7267	7084	7164
April	15.22	15.12	2,0208	2,1132	6935	7111	7168
May	15.75	15.66	2,0253	2,3048	7234	7409	7864
June	15.54	15.49	2,0378	2,2447	7226	7372	7704
July	15.75	16.05	2,1634	2,4427	7818	7682	8433
August	15.66	15.86	2,1402	2,3740	7736	7633	8243
September	15.73	15.64	2,0082	2,2967	7334	7572	8021
October	14.91	14.82	2,0260	2,0075	7051	7218	7051
November	15.04	15.13	2,0855	2,1157	7367	7409	7473
December	15.04	14.62	1,9090	1,9365	6780	7202	6879
Year	15.29	15.21	24,4438	25,7036	85481	87077	88517

^aDeflated values, 1961 = 100^bWith quantity held constant at November level of 2.08 lbs./capita.^cWith price held constant at November level of 15.04 ¢/lb.

to compare forecasts outside the sample period, from which the structural parameters have been estimated with subsequently observed values of the same variables. The closeness with which the predicted values approximate the actual values give a general indication only of whether the model is acceptable or unacceptable in predicting these values. Forecasting the predict requires having the values of all the variables on the right hand of the equation. The values of the endogenous variables in the system will be influenced by the value of the predict and thus cannot be known before the forecast is made. They must also be forecast at the same time. A solution for this problem is to obtain the estimated structural equations and then solve the resulting equations to obtain each endogenous variable as a function of exogenous variables only. This implies the use of the reduced form of the structural equations to forecast the values of the jointly dependent variable. The U-Coefficients for the structural equations used in forecasting indicate that an acceptable degree of confidence can be placed in the values forecast⁷.

Forecasting the 1972 situation for broiler chickens was carried out using the above mentioned forecasting technique. The Canadian average deflated price was forecast to be 15.29 (20.90) cents per pound with the monthly prices fluctuating between 14.57 (19.93) and

15.75 (21.54) cents per pound. The per capita slaughter was forecasted to be 24.4 pounds and the monthly per capita quantity slaughtered fluctuated between 1.84 and 2.17 pounds per capita. The total revenue was forecast to be 85.4 (116.9) million dollars (Table 3).

TABLE 3 CONVERSION TABLE FOR CALCULATION OF CURRENT VALUES

Month	Consumer Price Index	
	1971	1972*
January	1,303	1,349
February	1,309	1,352
March	1,313	1,356
April	1,322	1,359
May	1,327	1,362
June	1,330	1,366
July	1,341	1,369
August	1,350	1,372
September	1,347	1,376
October	1,349	1,379
November	1,354	1,382
December	1,367	1,386

*1972 values are forecasted values

When applying the technique outlined above for supply management, the quantity slaughtered were held constant at the November level of 2.08 pounds per capita. The price fluctuated between 14.34 (19.82) and 15.86 (21.92) cents per pound. The quantity demanded for 1972 increased from 24.44 to 25.02 and the estimated total revenue was 88.5 (121.1) million dollars,

⁷For a more accurate discussion on forecasting accuracy tests see: H. Theil, *Economic Forecasts and Policy*, 2nd Edition, Amsterdam: North Holland Publishing Company, 1961 also, *Applied Economic Forecasting*, Amsterdam: North Holland Publishing Company, 1966.

an increase of 3.6 percent. Wherever the fixed quantity slaughtered of 2.08 pounds per capita was greater than the forecast quantity slaughtered, a decrease in price was noted. Likewise, wherever the fixed quantity slaughtered of 2.08 pounds per capita was less than the forecast quantity demanded, an increase in price occurred.

Alternatively, when the price was held constant at the November level of 15.04 (20.58) cents per pound, the per capita quantity demanded ranged from 1.83 to 2.44 pounds per capita and the total quantity demanded was 25.7 pounds per capita. The estimated total revenue was 87.0 (119.1) million dollars, an increase of 1.8 percent.

Figure 2 (a) shows that in July, for example, an estimated 17.12 percent more broiler chicken could have been marketed in November at the November price of 15.04 cents per pound. However, if the quantity marketed in July had remained constant at the November level of 2.08 pounds per capita the price would have been 6.69 percent higher. Likewise, if the price had been stabilized for the month of June at the November level 7.6 percent more broilers could have been marketed in June. Alternatively, if quantity stabilization had been implemented the price would be an estimated 2.9 percent higher than in November.

Figure 2 (b) shows that for the months of January, February, October and December a decrease in price could have been expected of 11.89, 8.62, 3.74 and 7.15 respectively, if the quantity marketed was stabilized at the November level. If the price was stabilized at the November level, the quantity marketed could have been expected to decrease by 4.65, 3.37, 1.46 and 2.79 percent, respectively, from the November level.

IMPLICATIONS OF SUPPLY MANAGEMENT ANALYSIS

The impact of the supply management approach could be considered beneficial to broiler producers for a number of reasons. The results of the analysis indicated that about 4.9 percent more income could have been accrued to producers, if the pricing option had been implemented. Otherwise, about 2.9 percent more income could have been realized if the volume option had been used. Moreover, a greater degree of stability could have been introduced into the broiler industry at the producer level. By either option, the average price level could also have been improved. Since the same quantity of broilers could have been marketed using the volume option and weighted price increase (Table 1), producers would have been better off because total production costs should have remained constant. Similar reasoning can be used for the pricing option analysis.

The study also looked into the impact that market regulation through 'group action' might have on price and total revenue if inventory control and market development had been prime objectives of the 'group action'. The general conclusions that can be drawn from the quantitative analysis were that price and total revenue could be improved by the magnitude of five and fifteen percent for broiler chickens.

However, there are a few limitations such as:

(1) the analysis did not consider the effects of joint regulation of broiler chicken meat in pricing and volume strategies.

(2) the analysis makes no attempt to draw any conclusions about individual or provincial producer profit levels, but assumed that if total revenue increases, other things being equal, each producer would benefit from the supply management regulation.

(3) the analysis assumes that biological production can be altered in order to regulate the marketings at constant rates, without increasing production costs for broiler chickens.

(4) the forecast values for 1972 input data needed to simulate the market regulation analysis compared to actual values, indicate that some of the forecasts were not completely accurate and in some cases the error tends to accumulate. For example, the broiler chicken inventory forecast results were bias upward due to the fact that the forecasting technique used did not take into consideration the regulation of output in 1972. This affected the magnitude of the inventory forecasts.

The information developed was of a suggestive nature implying that through a strong co-ordinated group action, the total revenue of producers could be stabilized and/or improved by the implementation of certain regulatory techniques available to producer boards. The analysis shows that more price or quantity stability could be introduced via the group action approach to national regulation.

SUMMARY

The information on the effects of alternative regulatory strategies on improving and/or stabilizing producer prices and incomes for broiler chickens was encouraging and indicated that a national coordinated effort could possibly improve price and stability at the producer level. The volume strategy appeared to be the better alternative when inventory, price and market development options were compared. However, the volume strategy indicated that short-term revenue would be

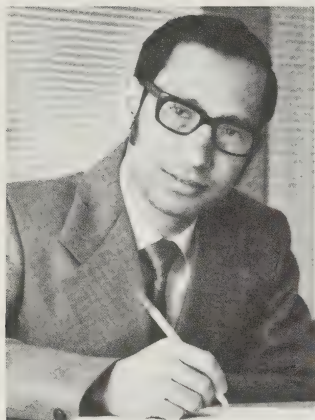
foregone, but the advantage of output stability would be greater over the years. A price pooling mechanism might be employed with the volume strategy to create price and volume stability at the producer level. The price pooling system has the advantage of paying equal prices for equal quality products. There would be regional allocation problems at the national level but a national organization could work out the details if such a system were adopted.

Finally, the analysis indicated that the role of producer marketing boards as an organization in creating stability

and cohesiveness in the broiler industry could benefit all broiler producers. The analysis was at the national level⁸ and assumed that the various boards acted in a co-ordinated 'group action' manner to regulate competition among themselves as well as the market via supply management.

⁸For a more detailed discussion of national organizations see: R.M.A. Loyns, "National Marketing Boards: A Review of Their Problems and Potentials", The Department of Agricultural Economics, The University of Manitoba, February 1971, (Mineograph).

STRUCTURE OF THE CANADIAN MANUFACTURING MILK AND CREAM PRODUCTION INDUSTRY



R.K. Sahi*

INTRODUCTION

The structure of the Canadian manufacturing milk and cream production industry has undergone significant changes in recent years (I, II, III). In order to formulate effective dairy policies and programs, it is necessary that these changes be measured and their nature, direction and causes determined. For this reason, the Economics Branch of Agriculture Canada in co-operation with the Canadian Dairy Commission, undertook a study of the structure of this industry as it existed in 1971. The study also attempted to examine the direction and magnitude of structural changes which have occurred in the industry since 1966.

A survey was carried out to collect specific information on various characteristics of the industry, including the nature and importance of the dairy enterprise, values of physical assets, numbers of livestock, labor utilization, and selected demographic features of farmers.

*Dr. R.K. Sahi is an economist with the Research Division of the Economics Branch, Agriculture Canada. This article is based on an Economics Branch report by Dr. R.K. Sahi which is currently under review, "Structural and Technological Change in Canadian Manufacturing Milk and Cream Production: 1966-1971." The statistics in this article are based on the above mentioned report. The author wishes to express his appreciation to Dr. V. Gilchrist, Dr. K.J. Mackenzie and Dr. B.B. Perkins for their constructive comments on this article.

The degree of producers' dependence on milk and cream sales increases with herd size.

On cream farms, livestock production is complementary to cream production.

Canadian cream producers are older than manufacturing milk and fluid milk producers.

There is an inverse relationship between the number of milk cows and the age of dairy farmers.

In May 1971, a single page questionnaire was mailed to all producers registered with the Dairy Commission. Included in the study were 84,000 manufacturing milk and cream producers distributed across Canada and about 9,800 fluid milk producers in Ontario and British Columbia, the only two provinces in the study for the fluid milk sector. Of the total 94,000 producers, 51,000 returned usable questionnaires, a response rate of 55 percent. The data for 1966 were obtained in a similar survey¹, but no information was collected on fluid milk shippers as none of these producers at that time were registered with the Dairy Commission. Some of the data used in the study were assembled from other sources (e.g., records of the Dairy Commission).

THE DAIRY ENTERPRISE

In 1971, there were 93,000 manufacturing milk and cream producers registered with the Canadian Dairy Commission. One-half of these shipped manufacturing milk and one-half farm-separated cream. While the cream producers were concentrated in the Prairies, over 90 percent of the manufacturing milk producers were located in Central Canada. Between 1966 and 1971 the cream producing sector declined in numbers by one-half

¹White, W.J., and Heighton, V.A. "The Structure of the Manufacturing Milk and Cream Industry in Canada", Economics Branch, Canada Department of Agriculture, Ottawa, 1968. Publication No. 68/6.

NUMBER OF CANADIAN MANUFACTURING MILK AND CREAM PRODUCERS, 1966-67 TO 1971-72

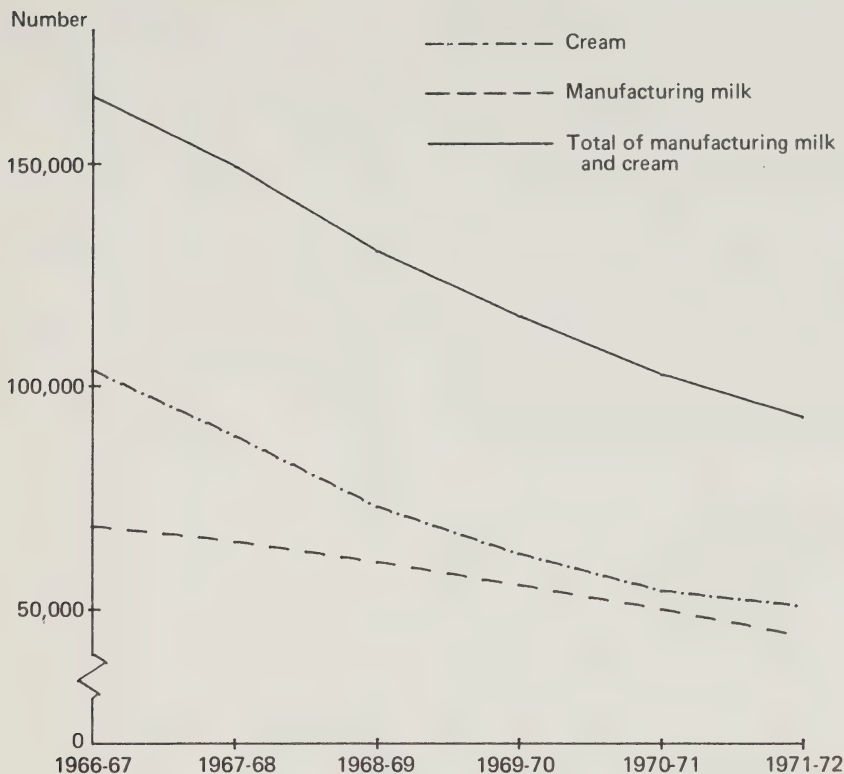


FIGURE 1

and the manufacturing milk sector by one-third (Figure 1). At this rate of decline, the numbers of non-fluid dairy producers will total 60,000 to 65,000 in 1976.

A combination of factors are responsible for the decline in the number of non-fluid dairy farms. One source suggests that these factors may include large capital requirements, age of operators, rising non-agricultural wages, increasing preference for leisure and improved old age security². Another source points out the existence

of more profitable alternatives such as crops in the Prairies and beef and hogs in the East³.

In terms of output and number of shippers, the cream sector has declined in relative importance in the Canadian dairy industry. The number of cream shippers as a percentage of the total number of manufacturing milk and cream producers dropped from 63 percent in 1966 to 54 percent in 1971. Many cream shippers have changed to shipping manufacturing milk. One reason for this shift is that bulk transportation has increased the distance over which milk can be shipped from farms to

²Saab, G.A., "Socio-Economic Study of Quebec Ex-dairy Farmers Whose Milk Quotas were Reallocated in 1967-1968 Through the Sale of Their Dairy Herd". An unpublished report, Economics Branch, Agriculture Canada, 1971.

³Perkins, B.C., Clark, J.H., and Marshall, R.G. "Canadian Dairy Policies", Ottawa: Queen's Printers, 1969, p. 20.

plants by significantly reducing the cost of handling⁴. This development, together with the inability of many small creameries to compete with the larger milk processing plants, has reduced the relative cost advantage of farm-separated cream. These changes apply particularly to Eastern Canada where there is a widespread distribution of manufacturing milk plants. In the Prairie Provinces, the number of milk processing plants has increased in recent years. This has provided producers with the opportunity to change from cream to manufacturing milk production. At the same time, the number of small creameries has decreased sharply.

From 1966-67 to 1971-72 total manufacturing milk and cream shipments for Canada declined by 14 percent reaching a level of 298 million pounds of butterfat in 1971-72⁵ (Figure 2). Cream shipments dropped by two-fifths during the same period. Projection of this trend indicates that cream shipments are likely to be 45 to 50 million pounds in 1975-76. Manufacturing milk shipments also fell in 1970-71, but have taken an upward turn since 1972-73. They appear likely to continue to increase in the future at a moderate rate⁶.

Generally, cream producers operated small dairy enterprises in 1971. The average herd size was nine cows (Table 1). Manufacturing milk producers had reasonably large herds (averaging 22 cows), while fluid milk producers maintained even larger ones (35 cows). Regionally, for all types of dairying, the Central Provinces had the largest herds. Between 1966 and 1971 the average number of milk cows per non-fluid dairy farm in Canada increased from 12 to 15 cows⁷. Increases in herd size occurred in all provinces except British Columbia. The largest increase took place in Quebec where the average number of cows rose from 15 to 21 per farm.

The majority of Canadian cream producers depended more on other sources of revenue than on cream; only 14 percent received more than one-half of their cash receipts from cream sales, while 28 percent derived one-half or more of their cash receipts from the sale of livestock. In Alberta and Ontario, the major portion of cream producers' total cash receipts was derived from

TABLE 1. AVERAGE NUMBERS OF LIVESTOCK ON DAIRY FARMS, CANADA, 1971.

	Average Number per Farm				
	Dairy Cows	Dairy Heifers	Beef Cattle	Veal Calves	Hogs
Cream Producers					
CANADA	9	5	20	9	36
Prince Edward Island	10	5	14	6	21
Nova Scotia	7	5	11	4	24
New Brunswick	11	5	10	6	20
Quebec	14	5	10	9	22
Ontario	12	7	24	9	48
Manitoba	8	4	17	8	28
Saskatchewan	7	4	20	10	28
Alberta	9	4	25	11	51
British Columbia	6	4	16	5	15
Manufacturing Milk					
CANADA	22	10	12	12	56
Prince Edward Island	14	8	17	4	33
Nova Scotia	15	7	16	4	23
New Brunswick	17	10	14	6	25
Quebec	22	9	9	12	62
Ontario	22	12	16	8	46
Manitoba	22	13	15	7	34
Saskatchewan	14	5	13	16	40
Alberta	22	11	27	12	58
British Columbia	19	11	12	1	4
Fluid Milk					
Ontario	35	25.0	15	9	71
British Columbia	39	25.0	9	7	36

livestock sales and in Manitoba and Saskatchewan from crop sales. However, a significant proportion of cream producers in Quebec and the Maritimes reported cream sales as an important part of their income: about one-third received more than half of their cash receipts from this source (Table 2).

Most of the manufacturing milk producers, especially in Quebec and Ontario, depended on milk sales to a significant degree: two-thirds received more than one-half of their cash receipts from this source. Fluid milk producers in Ontario and British Columbia also depended heavily on milk sales; about 90 percent of these producers received more than one-half of their cash receipts from the sale of milk.

The degree of dependence on milk and cream sales increased with herd size. Manufacturing milk producers with small herds (one to seven cows) received, on the average, two-fifths of their cash receipts from dairying, while producers with large herds (33 to 47 cows) obtained three-fourths of their cash receipts from this source.

⁴ Ibid, p. 20.

⁵ The "dairy year" (e.g., April 1 to March 31) is used here because the Canadian Dairy Commission assembles data on shipments of manufacturing milk and cream on this basis.

⁶ An unpublished research study by the author suggests that if current dairy policies continue, industrial milk supply would be about ten billion pounds in 1980.

⁷ Throughout this article, changes in farm characteristics between 1966 and 1971 are discussed on the basis of changes in averages, not adjustments by individuals.

QUANTITY OF BUTTERFAT SHIPPED BY CANADIAN MANUFACTURING MILK AND CREAM PRODUCERS, 1966-67 TO 1971-72

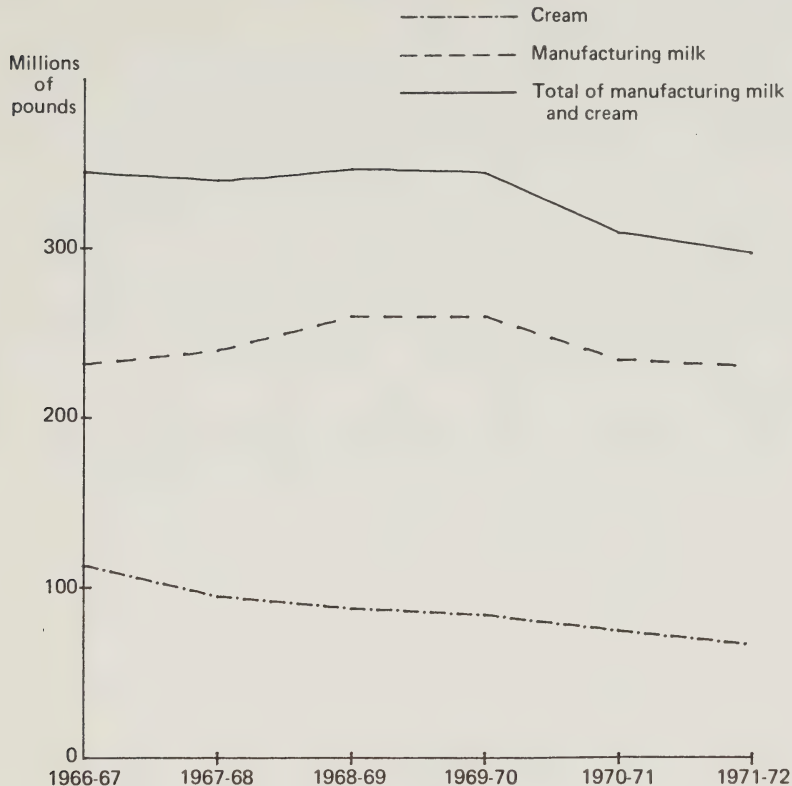


FIGURE 2

The 1966 and 1971 surveys showed that Quebec's manufacturing milk and cream producers increased their reliance on the sales of these two products significantly during this period. In Ontario, however, the dependence of manufacturing milk and cream shippers on dairying declined as a result of the transfer of some large volume milk shippers from the manufacturing milk pool to the fluid milk pool under the Graduated Entry Program⁸. Nationally, producers' dependence on manufacturing milk and cream sales remained at the same level between 1966 and 1971: 37

percent of the producers derived one-quarter of their cash receipts or less from this source in both years.

PHYSICAL RESOURCES

In 1971, the average size of Canadian manufacturing milk and cream farms was 443 acres, with large variations among provinces. Producers in the Maritimes and the Central Provinces averaged less than half of the Canadian average, whereas farms on the Prairies were larger. In Ontario and British Columbia, fluid milk producers operated more land than either manufacturing milk or cream producers. During the period 1966 to 1971, the average improved acreage of non-fluid dairy farms increased by 50 percent to 337 acres. Should the

⁸ Marshall, R.G., and Lane, S.H., "Fluid Milk Pricing and Producer Quota Policies in Ontario, 1965-1969", Department of Agricultural Economics, University of Guelph, Publication AE/71/5, May 1971, pp. 73-84.

TABLE 2. DISTRIBUTION OF CANADIAN DAIRY FARMS BY PROPORTION OF TOTAL CASH RECEIPTS FROM MILK & CREAM SALES, 1971

	Percentage of Total Cash Receipts						Total
	0-10	11-25	26-50	51-75	76-90	91 & over	
	per cent Cream						
CANADA	30	29	27	9	3	2	100
Prince Edward Island	9	19	47	19	4	2	100
Nova Scotia	28	17	26	17	6	6	100
New Brunswick	17	16	35	20	7	5	100
Quebec	16	7	28	29	12	8	100
Ontario	19	31	39	7	2	2	100
Manitoba	29	32	27	8	2	2	100
Saskatchewan	43	34	18	2	1	2	100
Alberta	32	31	27	6	2	2	100
British Columbia	30	24	25	13	2	6	100
	Manufacturing Milk						
CANADA	9	4	17	29	29	12	100
Prince Edward Island	5	10	47	27	9	2	100
Nova Scotia	3	8	35	46	3	5	100
New Brunswick	15	6	25	31	15	8	100
Quebec	11	2	13	28	32	14	100
Ontario	7	6	24	31	24	8	100
Manitoba	5	5	29	32	21	8	100
Saskatchewan	0	7	79	14	0	0	100
Alberta	6	9	31	30	19	5	100
British Columbia	9	9	9	27	37	9	100
	Fluid Milk						
Ontario	3	1	8	31	43	14	100
British Columbia	3	1	3	8	38	47	100

present trend continue, Canadian non-fluid dairy farms will average about 450 acres in 1976.

Cream producers had a higher average value of farm assets (including land, buildings, installed equipment and implements but excluding livestock) than manufacturing milk producers (\$51,400 and \$40,200 per farm respectively, Table 3). However, fluid milk producers in Ontario and British Columbia invested an average of \$115,000 per farm. The Western Provinces had substantially larger average capital stocks per manufacturing milk and cream farm than the Maritimes or the Central Provinces. Quebec farmers invested only half as much as Ontario producers. These differences in investment are a reflection of variations in the types of farming practiced in different regions. For example, higher values of farm assets in the Prairies are due to the larger crop acreages. The investment on cream farms in Ontario was higher than in Quebec as a result of larger beef enterprises and higher land prices in Ontario.

Canadian cream producers had a greater investment in land than manufacturing milk shippers, but less than that of fluid milk producers. However, they reported a lower investment in buildings, installed equipment, and implements than manufacturing and fluid milk producers. Regionally, the Western manufacturing milk and cream producers had higher amounts invested in these resources than farmers in the Central and Maritime provinces.

Four explanations exist for higher investments by fluid milk producers:

- 1) They require larger investments to maintain their bigger herds. In Ontario, for example, fluid producers averaged 35 cows per herd, while manufacturing milk producers had 22 cows and cream producers had 12 cows (Table 1). Statistical analysis, however, indicated that only 15 percent of the variation in total farm assets could be attributed to differences in herd sizes.

2) Fluid milk producers maintain better quality farm buildings and installed equipment in order to meet sanitary standards needed for fluid milk production. The superior quality of these inputs on fluid milk farms is reflected in their higher per cow investment than on non-fluid dairy farms (Tables 1 and 3).

3) Fluid milk producers own higher priced land than manufacturing milk or cream producing farmers. The Ontario fluid producers, for example, reported an average land price of \$250 per acre, while the corresponding figure for manufacturing milk producers was \$138. This price difference was likely due to the location of fluid milk farms nearer to urban centres and on better quality land.

4) Since fluid milk production is generally more profitable than manufacturing milk production, more investment in new buildings, implements, and installed equipment is likely to occur on fluid milk farms.

During the period 1966 to 1971, the value of land, buildings and installed equipment on Canadian non-fluid dairy farms increased by 70 percent, to \$36,400. Should

this trend continue in the future, the average investment will be about \$55,000 per farm in 1976.

SECONDARY LIVESTOCK ENTERPRISES

Large variations were observed in the numbers of dairy heifers raised by cream, manufacturing milk, and fluid milk producers. Cream producers averaged five heifers; manufacturing milk farmers averaged ten heifers; and fluid milk producers averaged 25 heifers (Table 1). As might be expected, in every province the number of heifers varied directly with the size of the dairy herd.

Canada's cream producers had a significant number of beef cattle (including steers, heifers and calves) with an average of 20 per farm. However, manufacturing milk producers had only half as many and fluid milk producers had even fewer. Regionally, dairy farmers in Alberta, Prince Edward Island and Ontario had larger beef herds than the national average.

Canadian cream and fluid milk producers maintained small veal enterprises, raising on the average about nine calves per farm. Manufacturing milk producers averaged

TABLE 3. AVERAGE FARM ASSET VALUES OF CANADIAN DAIRY FARMERS, 1971.

	Total Farm Assets	Land	Buildings & Installed Equip.	Implements
— dollars —				
Cream Producers				
CANADA	51,410	27,615	13,088	10,707
Prince Edward Island	37,195	14,281	13,205	9,709
Nova Scotia	20,184	7,804	7,945	4,435
New Brunswick	24,367	8,377	9,611	6,379
Quebec	23,254	8,486	8,744	6,024
Ontario	52,004	27,072	17,591	7,341
Manitoba	44,157	23,367	10,985	9,805
Saskatchewan	60,224	33,880	13,124	13,220
Alberta	63,682	35,603	15,123	12,956
British Columbia	59,483	39,228	12,730	7,525
Manufacturing Milk				
CANADA	40,165	17,307	13,889	8,969
Prince Edward Island	40,756	17,514	13,402	9,840
Nova Scotia	28,172	13,387	10,108	4,681
New Brunswick	30,010	9,609	10,679	9,722
Quebec	32,689	12,777	11,783	8,129
Ontario	54,523	25,452	19,097	9,974
Manitoba	76,305	38,338	21,810	16,157
Saskatchewan	66,581	40,535	16,075	9,971
Alberta	75,578	41,450	19,595	14,533
British Columbia	101,114	66,270	23,400	11,444
Fluid Milk				
Ontario	115,280	63,670	34,305	17,305
British Columbia	155,271	100,380	38,968	15,923

12 calves per farm. Provincially, producers in Quebec, Saskatchewan and Alberta had larger veal enterprises than the national average. The veal enterprise expanded from 1966 to 1971 on most Canadian cream and manufacturing milk farms, especially in Quebec. In the future, this enterprise appears likely to increase further, but at a slower rate than that experienced in the past.

Hog enterprises were more common on cream farms than on manufacturing milk farms. Two-thirds of cream producers, compared with one-third of manufacturing milk producers, reported raising hogs. On fluid milk farms, this enterprise occurred very infrequently. Regionally, hog production on dairy farms is concentrated more in Ontario and Alberta.

On cream farms, the number of milk cows was positively related to the incidence of beef, veal and hog enterprises. This relationship indicates that livestock production can

be described as complementary to cream production. This phenomenon is not surprising because skimmilk as a by-product of cream production is used in feeding veal calves and hogs. In addition, calves from dairy cows are often raised and sold for beef purposes.

LABOR UTILIZATION

Hired labor was most common among fluid milk farmers as nearly one-half of all producers employed outside help. It was least prevalent on cream farms where only ten percent of the producers hired labor (Table 4). Provincially, the incidence of hiring was highest in Quebec. The study showed that variations in the amount of hired labor among cream, manufacturing milk and fluid milk producers can be attributed largely to differences in herd size. Many large herds require more labor than operators can provide with family help. Therefore, they must use outside labor.

TABLE 4. LABOR CHARACTERISTICS OF DAIRY FARMS, CANADA, 1971.

	Percentage not Reporting Hired Help	Average No. of Weeks of Hired Labor by those Employed	Percentage Not Reporting Off- Farm Employment	Average No. of Weeks Worked Off-Farm by those with Jobs
	- percent -	- weeks -	- percent -	- weeks -
Cream Producers				
CANADA	90	11	81	20
Prince Edward Island	84	13	80	20
Nova Scotia	83	12	70	23
New Brunswick	80	12	69	21
Quebec	75	11	70	17
Ontario	91	16	76	20
Manitoba	91	9	84	22
Saskatchewan	93	10	88	19
Alberta	93	9	82	22
British Columbia	87	7	64	26
Manufacturing Milk				
CANADA	68	13	77	18
Prince Edward Island	73	13	77	22
Nova Scotia	73	12	65	32
New Brunswick	63	14	83	30
Quebec	63	13	75	16
Ontario	71	14	80	23
Manitoba	73	14	84	23
Saskatchewan	100	—	93	24
Alberta	68	15	87	21
British Columbia	82	4	64	50
Fluid Milk				
Ontario	47	24	88	16
British Columbia	42	17	85	26

Relative to 1966, fewer farmers reported hired help in 1971: the proportion of non-fluid dairy farmers employing labor fell from 48 percent to 21 percent during this period. In the future, the use of hired labor seems likely to decline even further in the Canadian manufacturing milk and cream industry because of the continuing introduction of labor saving technology such as milking machines and bulk tanks.

Off-farm employment was uncommon among Canadian dairy farmers, especially fluid milk producers. Only 20 percent of the cream shippers, 23 percent of the manufacturing milk farmers and 15 percent of the fluid milk producers worked off their farms. However, those who took off-farm jobs worked, on the average, from four to five months. Regionally, off-farm work was more prevalent in the Maritimes, Quebec and British Columbia than in the other provinces. From 1966 to 1971, the incidence of off-farm employment among Canadian manufacturing milk and cream producers declined from 31 percent to 21 percent. Since off-farm employment is inversely related to herd size, it is likely to decline in the future among farmers remaining in the industry, because of the concurrent expected increases in the number of dairy cows per farm.

DEMOGRAPHIC FEATURES

Generally, Canadian cream producers were older than manufacturing milk and fluid milk producers. On the average, cream shippers were 50 years of age, whereas manufacturing milk and fluid milk producers averaged four to five years younger. The average age of non-fluid dairy farmers in Canada did not change between 1966 and 1971 and appears unlikely to change much in the next five years.

An inverse relationship was found between the number of milk cows and the age of dairy farmers. One explanation for this relationship could be that economic aspirations and risk-taking attitudes diminish with the age of the operator⁹. As a result, older farmers maintain small herds and younger producers keep large herds.

Fluid milk producers averaged two years less experience in farming than manufacturing milk producers and four years less experience than cream shippers. This pattern reflected the difference in the age of the three types of producers. Producers in all provinces averaged about the same number of years of experience for the same type of dairying.

⁹Hobbs, D.J., Beal, G.M. and Bohlem, J.M. "The Relation of Farm Operators Values and Attitudes to Their Economic Performance", Department of Economics and Sociology, Iowa State University, Ames, Rural Sociology Report No. 3, June 1964, p. 137.

Canadian manufacturing milk and cream producers did not have high levels of formal education. They averaged seven years of schooling. Fluid milk producers averaged nine years of schooling. Provincially, Nova Scotia producers had more education than farmers in the other provinces. The number of years of schooling of the operator was unrelated to herd size for manufacturing milk and cream producers, but was positively related to herd size of fluid milk farmers.

CONCLUSIONS

Based upon the results of this study, a number of conclusions can be made regarding the Canadian dairy industry. Some of these are as follows:

1. Cream shipping has been declining in Canada. Should the 1966-67 to 1971-72 trend continue, cream shipping may virtually disappear within fifteen years. This, however, does not necessarily imply that butter production will decrease. Instead, butter production may become more dependent on factory-separated cream.

2. Presently, many of the non-fluid dairy herds are small and their rate of enlargement is slow. Hence, the average size of non-fluid herds will likely be 18 cows in 1976.

3. Since the majority of Canadian cream producers depend to a very limited extent on cream sales as a source of cash receipts, a price-support program for this product is unlikely to improve their total income position significantly. There is another group of dairy farmers in each province, who depend on milk and cream sales to a large extent but whose businesses are so small that they cannot be helped very much (in absolute terms) by any kind of price support program. On the other hand, a few large volume producers, who presumably are already better off than their small volume counterparts, benefit most from price support programs.

4. Farmers' dependence on milk and cream sales as a source of cash receipts is closely related to the type of market available to them. Fluid milk shippers averaged about three-quarters of their total cash receipts from milk, while cream shippers derived only one-quarter of their cash receipts from this source. Differences in dependence levels are also closely related to herd sizes of dairy producers.

5. The trend in the use of hired labor during the period 1966 to 1971 suggests that the incidence of hired labor in the dairy sector will decline in the future. The study also indicated that off-farm employment of dairy producers will decline with concurrent increases in the size of dairy farms.

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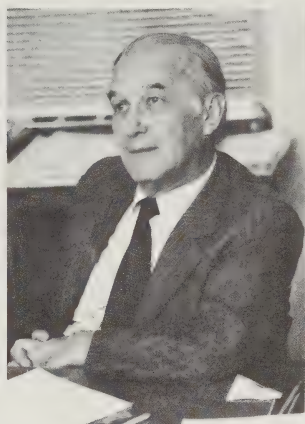
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TRENDS IN PER CAPITA FOOD CONSUMPTION IN CANADA (1949-1971)



Canadians today are eating more meat, fruit, vegetables and low-fat fluid milk, but less bread, butter, fluid whole milk and fresh potatoes than twenty years ago. In addition, a higher proportion of food is eaten in the processed and ready to serve form and in restaurants.

D.M. Shute*



Z.Y. Yankowsky*

INTRODUCTION

The changing composition of the total food basket, along with considerable increases in the prices of food, have recently gained much attention from Canadian consumers and other sectors of the economy, including governments.

The objectives of this paper are to examine the patterns of per capita food consumption in Canada for the period 1949 to 1971 and to analyze the trends over this period for each of the major food components.

The Canadian Food Basket consists of hundreds of foods, which for the purpose of this paper and for the simplicity of presentation, are aggregated into several major commodity groupings.

These food items are totalled in pounds on the basis of retail weight (R/W), or an equivalent, to achieve consistency in aggregating different foods. Imported as well

as domestic foods are included. Note that inadequate reporting, especially for stocks on hand and for human use for some products, as well as the unfavorable weather with regard to fruit and vegetables, explains in part considerable annual variations shown in table 1.

CANADIAN FOOD BASKET

As expected, changes in the consumption of total food have not been as dramatic as for individual foods (Table 1). Total food consumption increased from 1,407 pounds in 1949 to about 1,458 pounds in 1958. It then declined slightly and at present is again close to 1,458 pounds (Figure 1).

Cereal product consumption has dropped consistently from an average consumption during the period 1949-1951 of slightly over 170 pounds to an average consumption during 1969-1971 of about 150 pounds, (Figure 3). Most of this decrease was caused by a drop in the consumption of the basic cereal products of wheat flour, oatmeal, rolled oats and pearl barley. The variety cereals such as rye flour, corn flour and rice showed an increase during the same time period. Breakfast food consumption has remained almost constant.

Sugars and syrups have shown little change in consumption since 1949, ranging close to 112 pounds per capita for the entire period studied. Decreases in the con-

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TABLE 1. PER CAPITA FOOD CONSUMPTION, CANADA, 1949-71.

	Cereals	Sugars and Syrups		Pulses and Nuts	Fruit 1/	Vegetables	Potatoes	Oils and Fats		Red Meat 2/	Dairy Products Including Butter		Eggs	Beverages	Food Consumption, Total	
		R/W	R/W					Including Butter	Excluding Butter		R/W	R/W				R/W	R/W
					— Fresh Equivalent Wt. —											
					lbs											
1949	168.7	113.4	10.6	196.0	91.9	159.6		51.3	27.8	117.1	15.8	13.3	453.4	28.9	10.5	1407.2
1950	174.6	114.6	11.8	199.0	93.8	171.9		51.7	29.4	111.9	16.1	13.7	453.8	29.5	10.0	1430.1
1951	171.5	109.2	11.9	212.4	88.9	161.2		48.7	27.5	112.7	18.0	13.5	448.1	30.0	9.3	1413.4
1952	166.9	107.5	10.0	227.3	88.9	162.7		49.3	28.5	116.1	21.7	13.5	444.9	33.3	10.0	1433.3
1953	161.7	106.5	11.0	229.5	88.9	169.0		48.8	27.9	116.2	19.8	13.7	446.6	34.4	10.3	1435.5
1954	165.0	106.1	9.9	232.0	92.2	158.8		48.8	28.1	116.6	21.7	13.5	446.8	35.8	9.6	1436.1
1955	160.0	110.5	10.5	241.8	88.6	158.0		48.7	28.4	119.1	24.3	13.6	448.0	36.0	10.1	1448.9
1956	163.6	113.1	11.4	231.3	93.3	161.8		49.4	28.9	121.7	25.6	13.5	449.1	36.0	10.9	1460.2
1957	155.4	107.2	11.0	238.8	98.9	164.9		48.5	28.2	116.6	25.9	13.4	450.2	37.5	11.2	1459.2
1958	159.8	111.1	10.2	241.6	100.5	162.3		48.8	29.7	116.3	27.5	13.7	438.2	36.3	11.2	1458.4
1959	152.8	111.7	9.7	249.6	98.5	158.0		49.8	31.7	120.6	30.3	13.3	423.9	34.9	12.3	1447.3
1960	154.4	109.5	10.0	245.4	103.8	153.9		49.0	32.0	121.8	27.7	12.6	413.0	34.5	11.4	1430.0
1961	152.6	112.0	10.1	237.0	108.2	156.2		48.3	31.8	116.7	31.1	12.4	400.8	33.9	11.4	1414.2
1962	150.3	112.2	9.2	239.1	102.6	157.8		50.4	32.5	116.9	31.0	12.4	396.0	33.8	12.0	1405.8
1963	157.2	107.4	9.5	236.4	104.1	154.8		50.7	31.6	119.6	33.0	14.5	396.0	32.2	12.2	1408.5
1964	145.3	110.9	10.4	233.7	105.4	157.5		50.7	31.7	124.4	35.0	13.2	394.0	32.2	11.3	1404.9
1965	163.4	113.9	10.8	243.1	113.9	156.4		49.0	30.5	123.6	36.6	13.5	389.8	32.0	11.1	1438.6
1966	149.9	118.8	12.2	242.7	116.4	178.0		52.4	34.6	122.5	39.3	12.9	385.1	30.8	10.4	1453.6
1967	149.4	113.8	10.6	254.5	115.9	170.7		51.3	34.4	130.1	40.7	13.4	374.7	31.8	11.7	1451.7
1968	149.4	114.7	11.1	248.6	117.6	170.6		52.0	35.5	131.5	39.7	12.7	366.2	32.0	12.2	1441.8
1969	153.3	115.5	9.9	245.3	110.6	160.3		54.3	38.6	129.6	42.8	12.9	360.4	32.6	11.7	1423.5
1970	152.2	115.7	14.2	244.7	119.0	156.3		53.9	38.2	131.8	44.8	12.0	356.5	32.7	11.4	1429.5
1971p	146.1	117.2	17.5	252.8	118.1	163.3		53.7	38.0	141.5	43.8	11.4	356.5	32.6	11.6	1450.4

1/ Includes Tomatoes. 2/ Carcass weight values recalculated to retail weight.

Source: Based on Statistics Canada Data.

PER CAPITA FOOD CONSUMPTION

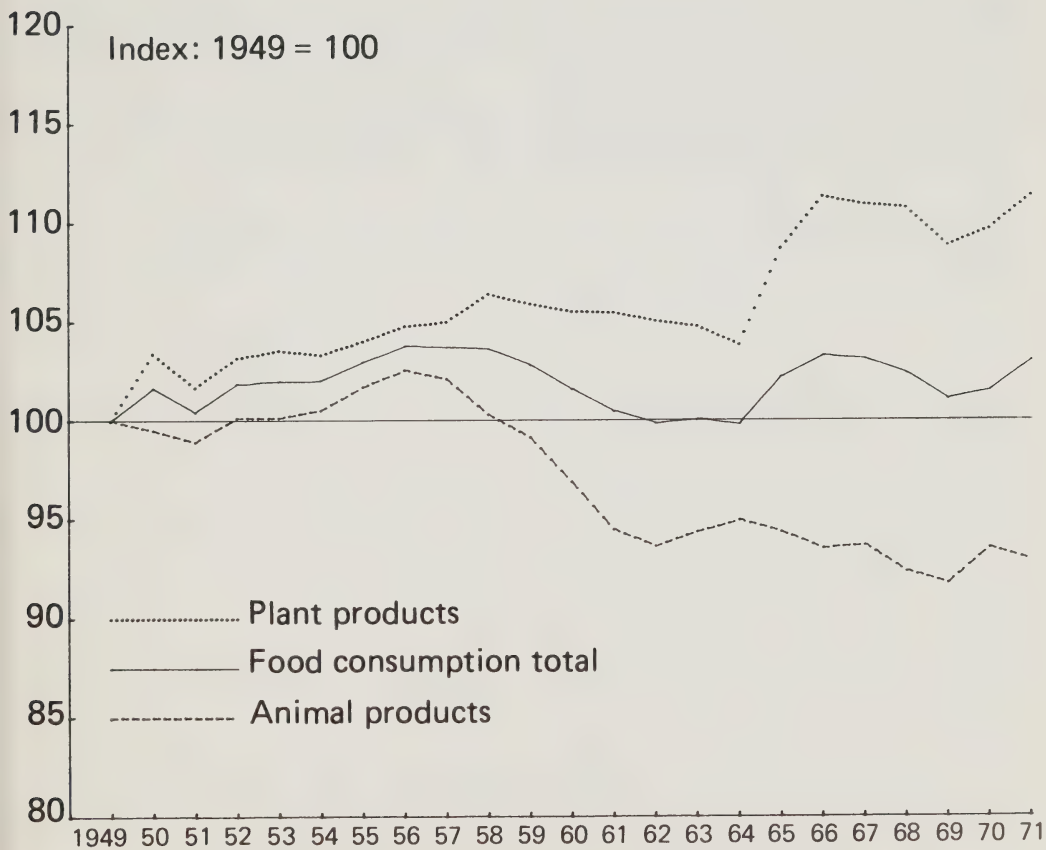


FIGURE 1

PER CAPITA FOOD CONSUMPTION: SELECTED ANIMAL PRODUCTS

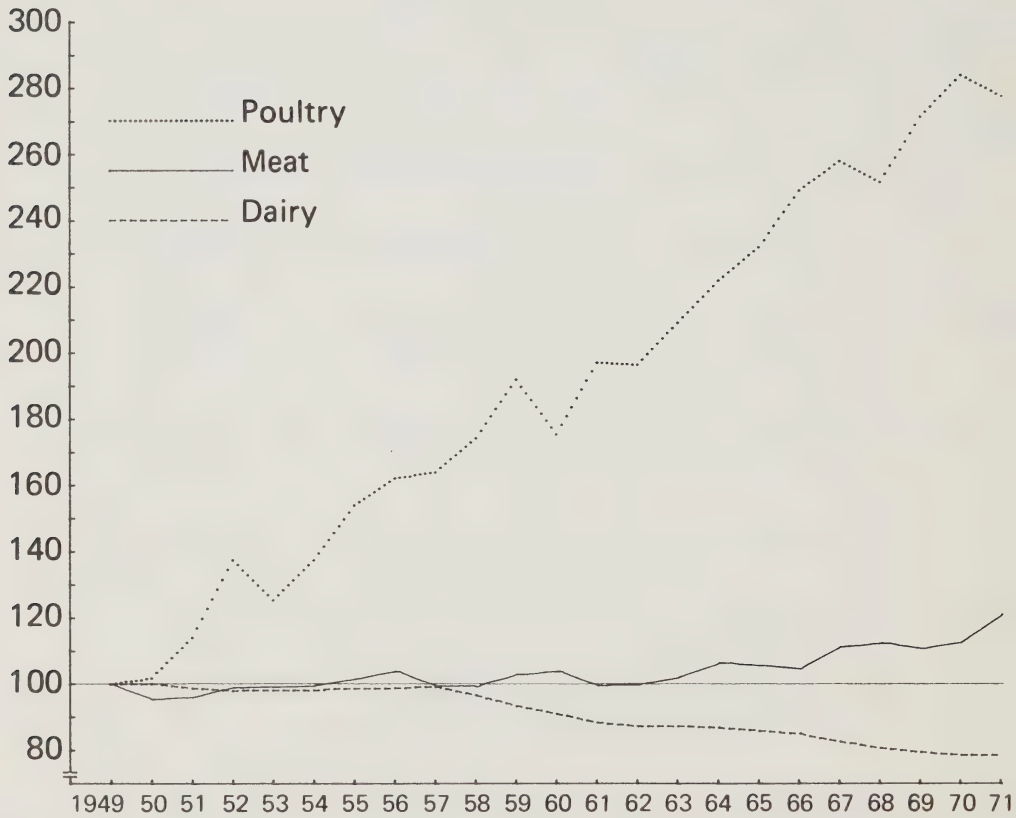


FIGURE 2

sumption of maple sugar were offset by slight increases in sugar and "other" sugars and syrups, creating a slightly upward trend.

The consumption of pulses and nuts remained relatively stable up to 1969, averaging slightly over ten pounds per capita. During the last two decades pulses have tended to decline slightly while the trend for nuts has risen. However, consumption of pulses in 1970 and 1971 increased substantially. This may be indicative of a reversal in the trend for pulse commodities.

Increased consumption of total fruits since 1949 (Figure 3) has increased largely in the form of processed fruits. Fresh fruit consumption also rose during the last twenty years, but not to as great a degree as processed fruits.

Vegetable consumption continues to increase as it has done since 1949, (Figure 3). As in the case of fruits, the greatest amount of the increase has been in the processed form¹.

Fruits and vegetables, together, comprised about 26 percent (by weight) of the total food basket in 1971, as compared to 20 percent in 1949.

Potato consumption remained relatively stable from 1949 to 1971 with a slight downward trend, (Figure 3). The consumption of fresh potatoes decreased considerably, but an increased consumption of processed potatoes offset this to a large degree.

The total consumption of oils and fats remained close to 50 pounds per capita during the period studied. Decreases in the consumption of animal fats, especially butter, were more than offset by increased consumption of vegetable oils. In 1949, per capita consumption of margarine, shortening and shortening oils was about 18 pounds per capita or 30 percent of total oil and fat consumption. Butter and lard consumption, on the other hand, was about 33 pounds per capita or 65 percent of the total oils and fats. By 1971, the consumption of margarine, shortening and shortening oils had increased to about 30 pounds per capita or 45 percent of the total oil and fat consumption. Butter and lard consumption declined to about 23 pounds per capita or 44 percent of the total oils and fats. Total oil and fat consumption is likely to continue to increase slightly with more emphasis on vegetable oil consumption.

Per capita consumption of meat and meat products remained relatively stable until about 1962, averaging

about 117 pounds, (Figure 2). Since 1963 increased consumption of beef has resulted in this total figure rising almost consistently. Large increases in pork consumption during the last five years, particularly in 1971, raised total meat consumption to a high of 142 pounds. Increases in beef consumption have offset decreases which have occurred in the consumption of veal. Mutton and lamb consumption has remained relatively stable at about 3 pounds per capita. Consumption of total meat and meat products over the period shows a strong upward trend.

Tremendous increases in the consumption of both turkey and chicken from 1949 to 1971 have been responsible for raising the total consumption of poultry meat² over 170 percent (Figure 2). Chicken consumption increased by about 155 percent, from 13 pounds in 1949 to 33 pounds in 1971. Turkey consumption rose even more, from about 3 pounds in 1949 to 10 pounds per capita in 1971, an increase of over 300 percent.

Very little change in the consumption of fish products has occurred since 1949. An increase in the consumption of fresh and frozen fish and shellfish could not offset decreases in both cured and canned fish consumption. A slowly declining trend is evident.

The consumption of dairy products has declined considerably over the time period studied, (Figure 2). In 1949, dairy products comprised 33 percent or 453 pounds of the total food basket. In 1971 they comprised about 356 pounds or 25 percent. This drop was largely due to decreased consumption of butter, concentrated whole milk products (i.e., evaporated milk, condensed milk, milk powder, etc.), fluid milk and cream. Butter consumption, during this period, dropped from 24 pounds to 16 pounds, a decrease of about 33 percent. Fluid milk and cream also showed a large reduction, from 392 pounds in 1949 to 287 pounds in 1971. These decreases have been slightly offset by increases in the consumption of cheese, concentrated milk by-products (i.e., skim powder, condensed skim, evaporated skim) and ice-cream. The largest increase in cheese was for cheese other than cheddar or processed. The consumption of other cheese rose from less than a pound per capita in 1949 to 3.8 pounds in 1971. Cottage cheese consumption also rose considerably, from half a pound to 2.2 pounds.

Egg consumption increased steadily from 1949 to reach 38 pounds per capita in 1957. From 1958 to 1966 a reverse trend resulted in consumption dropping to 31

¹ Caution should be given to the use of fruit and vegetable figures as some of the fruit and vegetables that are included in later years were not available earlier.

² Poultry meat includes chicken, turkey, ducks and geese.

PER CAPITA FOOD CONSUMPTION: SELECTED PLANT PRODUCTS

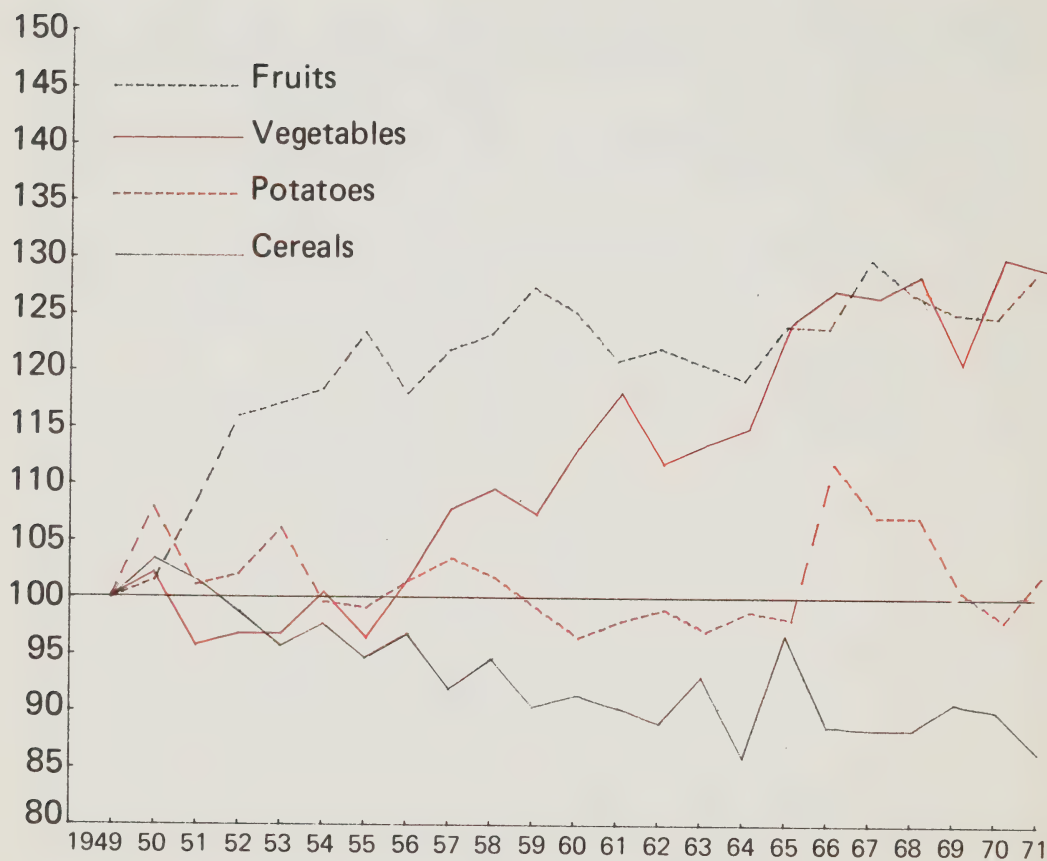


FIGURE 3

pounds per capita. Since 1966, a slowly increasing trend is again evident.

Increased coffee consumption has been responsible for an upward trend in beverages. Tea consumption during the time period studied shows an almost continuous decline.

SUMMARY

It is clear from this report that numerous changes in the consumption of various food components have occurred over the last two decades while the total food basket has remained relatively stable. Consumption patterns have switched so that decreases in some components have resulted in increases in others. This has tended to keep total consumption at the same level. Changes in consumption patterns have occurred for various reasons.

In this age of social awareness, people have become more concerned with health problems as a result of diet³. An increasing substitution of vegetable oils for animal fats and low fat milk products for whole milk products is evident. Weight conscious consumers may have aided in the downward trends for cereal and potato products

along with the upward trends for fruit, vegetables and meat products. These same changes are also a result of income increases which have allowed consumers to switch to higher valued products. Relative price changes have also affected shifts in per capita consumption.

Science and industrialization have also been responsible for many of the apparent changes. Changes in prices of foods as a result of advanced technology have continually occurred. Improved methods of transportation and processing have made many fruits and vegetables more accessible at a lower cost in both the summer and winter months. The migration from rural to urban environments, an increasing number of women in the labour force and a more time-consuming way of life has resulted in the increased use of processed and ready-made foods. The consumption of tea, established by the English as a leisure beverage, has also given way to its substitute, coffee.

The variety of reasons that result in a consumption change are numerous and complex. Although the trends for various food products can be studied, it is difficult to predict with much accuracy just where the next commodity change or reallocation will occur because of advancing technology, new food substitutes, changing consumer preferences and social structure. Improved ability to predict will depend upon an understanding of these variables.

³ Le Boirt, C. and Hazen Gale, "Potential Effects of Fat-Controlled Low Cholesterol Diet on U.S. Food Consumption", Agricultural Economics Research, U.S.D.A., July 1971, Vol. 23, No. 3.

POLICY AND PROGRAM DEVELOPMENTS IN CANADA

NATURAL PRODUCTS MARKETING ACT

(Manitoba Hog Order)

"The Commodity Board is authorized to regulate the marketing of hogs in interprovincial and export trade and for such purposes may, with respect to persons and property situated within the Province of Manitoba, exercise all or any powers like the powers exercisable by it in relation to the marketing of hogs locally within that Province under the Act and the Plan." (February 27, 1973)

AGRICULTURAL PRODUCTS CO-OPERATIVE MARKETING ACT

(Ontario Bean Producers' Marketing Board)

The Ontario Bean Producers' Marketing Board has been authorized

a) "to make an interim payment to primary producers in the amount of \$1.25 per hundredweight of pea beans; and

b) to make an interim payment to primary producers in the amount of \$3.00 per hundredweight of yellow-eye beans, delivered to the Board for marketing under the terms of an agreement dated August 30, 1972 (...) for the marketing of pea beans and yellow-eye beans produced in Ontario in the year 1972." (February 27, 1973)

GRASSLAND INCENTIVE PROGRAM EXTENDED

The federal government has removed the limit on total acres payable under the three-year Grassland Incentive

Program to provide incentive for farmers in livestock production areas who want to grow more forage.

The Department of Agriculture now has the authorization to pay \$10 per acre on all eligible acres of added forage production. This could provide an additional \$2,500,000 to farmers during the final year. By the end of 1972, more than 25,600 farmers received payments totalling \$25,450,470. It is estimated that increased land that was seeded in 1972, in production of grass and legumes in 1973 and eligible for payment, will total one million acres.

Federal Dairy Policy

The policy changes, effective April 1, 1973, are equivalent to an increase of about 60 cents per hundred pounds of milk. However, authority to set market prices paid to farmers rests with provincial agencies.

The Canadian Dairy Commission has been authorized to set its support price on butter at 71 cents per pound, an increase of three cents. The new support price on skim milk powder will be 35 cents per pound, an increase of six cents. The support price for cheese is 60 cents per pound, up six cents.

"The rate of direct subsidy to producers is to be increased by 20 cents per hundred pounds of milk, or 5.71 cents per pound of butterfat. The total new subsidy rate will then be \$1.45 per hundred pounds of milk, or 41.42 cents per pound of butterfat."

"The changed relationship between the domestic and international price for skim milk powder will necessitate the Canadian Dairy Commission increasing the rate of producer levy to 30 cents per hundred pounds of milk." The previous levy was 10 cents.

PUBLICATIONS

ECONOMICS BRANCH PUBLICATIONS

Available from the Economic Communications Unit, Agriculture Canada, Ottawa, K1A 0C5

Spring Outlook, 1973, CROPS. March 1973, 46 p. Tables, graphs.

Spring Outlook, 1973, LIVESTOCK. April 1973, 37p. Tables, graphs.

These two booklets are produced by the Market Outlook Section in the Marketing and Trade Division of the Economics Branch. These publications give the expected trends of agricultural commodities.

The Economics of Grapes in B.C. O.G. Dawson and B.K. Acton. Vancouver, B.C. December 1972. 40p. Tables. Pub. No. 72/12. This study presents economic information concerning grape production costs and returns in the Okanagan region of British Columbia.

Costs and Returns on Fruit Farms in B.C. C. Arendt. Vancouver, B.C. December 1972. 41p. Tables. Pub. No. 73/1. This study presents a perspective of the Okanagan orchard industry, including capital investment, financial inputs and returns, land use patterns and yields.

AGRICULTURE CANADA PUBLICATIONS

Available from the Information Division, Agriculture Canada, Ottawa, K1A 0C5

Guide to Food Grades. Ottawa, 1972. 16p. Tables. Cat. No. A73-1500. Free.

Origin of Livestock Marketed. Monthly report. Cat. No. A77-11/42-11. Free.

Canadian Plant Disease Survey. Issued by the Research Branch quarterly.

Dairy Produce Market Report. Weekly. Cat. No. A77-7/48-5. Free.

Farming in Canada. Ottawa, reprinted in 1973. 57p. Illus., maps. Cat. No. A15-1296. Free.

This publication outlines the physical and social conditions under which farming is carried out, the various types of production found from coast to coast, the means by which farm products reach the consumer

and the steps taken by the federal government to assist the farmer and safeguard the nation's food supply.

Soils of the Slave River Lowland in the Northwest Territories. J.H. Day, Ottawa, 1972. 60p. Maps, Illus., tables, figs. Prepared in the Soil Research Institute, Central Experimental Farm, Ottawa. Cat. No. A57-444/1972. Free.

Land Capability Analysis: Canada Land Inventory. Peace River Area, B.C. Ottawa. Bilingual. Map. Cat. No. EN.64-6/2A7. 50¢ per copy.

Beef Production in the Atlantic Provinces. Originally prepared by a subcommittee of the Atlantic Provinces Livestock Committee. "This publication summarizes some of the management practices recommended for profitable beef production. It includes information on cow-calf enterprises and on finishing feeder cattle for slaughter." 1972, Illus., tables. 47p. Pub. No. 1494.

Artificial Rearing of Young Lambs. A.D.L. Gorill *et al.* "This publication summarizes the information that is available on raising lambs on milk replacers, and makes recommendations for the practical application of this information." Illus., tables. 22p. Cat. No. A53-1507.

Black Flies. F.J.H. Fredeen, Research Station, Saskatoon, Sask. Illus., tables. 19p. Cat. No. A43-1499.

Paving on the Farm. J. Pos, School of Engineering, University of Guelph; originally prepared for the Ontario Department of Agriculture and Food. Illus., 27p. Cat. No. AG-1491.

GOVERNMENT OF CANADA PUBLICATIONS

Available from Information Canada, 171 Slater Street, Ottawa, K1A 0S9

Special Committee on Trends in Food Prices. Cat. No. XC2-291/1-9. \$1.70 per copy.

Consumption Data of Packaged Perishable Food Act. First reading, January 15, 1973. 2p. Cat. No. XB291-100/1. 15¢ per copy.

Canada Land Inventory. Land Capability for Forestry. Ottawa. Bilingual.

-30L-Welland, Ont. 1972. EN. 64-3/30L.
 -31B-Ogdensburg, Ont.-Que. 1971. EN. 64-3/31B.
 -40PO-Kitchener, Ont. 1971. EN. 64-3/40PO.
 -63B-Waterken Lake, Man. 1971. EN 64-3/63B.
 -83E-Mount Robson, Alta. 1971. EN. 64-3/83E.
 -84B-Peerless Lake, Alta. 1972. EN. 64-3/84B.

Each of these consists of a folded map with general description. 35¢ per copy.

STATISTICS CANADA PUBLICATIONS

*Available from the Publications Distribution Unit,
 Statistics Canada, Ottawa, K1A 0T7*

Census of Canada. 1971. Advance bulletin. Bilingual. Prepared in the Census Division. -AA-9. **Agriculture: Fertilizer use.** Ottawa, 1973. Table, map. Cat. No. CS96-726. 75¢ per copy.

-AA-15. **Agriculture: Selected Data for Census-Farms Classified by Economic Class, Western Provinces.** Ottawa, 1973. Tables. Cat. No. CS96-732. \$2.00 per copy.

-AA-18. **Agriculture: Data from the Post-Census Agriculture Sample Survey.** Ottawa, 1973. Tables. Cat. No. CS96-735. \$1.50 per copy.

Quarterly Bulletin of Agricultural Statistics. Bilingual. Cat. No. 21-003. \$4.00 per year.

Index Numbers of Farm Prices of Agricultural Products. Monthly. Bilingual. Cat. No. CS62-003. 10¢ per copy. \$1.00 per year.

Retail Prices and Living Costs. Percentage change in retail prices indexes for selected food items. Monthly. Bilingual. Cat. No. 62-005. \$2.00 per year.

Trade of Canada. Imports by commodities. Monthly. Bilingual. Cat. No. 65-007. 75¢ per copy.

Selected Dairy By-Products. Production and Inventory of Process Cheese. Monthly. Bilingual. Cat. No. CS 32-024. \$1.00 per year.

Stocks of Dairy and Frozen Poultry Products. Monthly. Cat. No. CS 32-009. 20¢ per copy. \$2.00 per year.

Shipments of prepared Stock and Poultry Feeds. Monthly. Bilingual. Cat. No. 32-004. 20¢ per copy. \$2.00 per year.

Production of Eggs. Monthly. Bilingual. Cat. No. CS 23-003. 10¢ per copy. \$3.00 per year.

Coarse Grains Review. Monthly. Bilingual. Cat. No. CS 22-001. 75¢ per copy. \$3.00 per year.

Oilseeds Review. Monthly. Cat. No. 22-006. 75¢ per copy. \$3.00 per year.

Tobacco and Tobacco Products. Production and disposition of tobacco products. Monthly. Bilingual. Cat. No. CS 32-022. \$1.00 per year.

Field Crop Reporting Series, 1973. Summerfallow and stubble, acreage and yield of specified crops, Prairie Provinces, 1973. January 1973. Cat. No. CS 22-002. 20¢ per copy. \$4.00 for series of 20 reports.

Report on Livestock Surveys: Pigs. December 1972. Cat. No. CS 23-005. \$1.00 per year.

Pork Shipments and Stocks of Selected Canned Fruits and Vegetables. Monthly. Bilingual. Cat. No. CS 32-011. 20¢ per copy. \$2.00 per year.

FAO, OECD AND UN PUBLICATIONS

Available from Information Canada

Report of the FAO Conference on the Establishment of Cooperative Agricultural Research Programmes Between Countries with Similar Ecological Conditions in Africa. Guinean Zone. Agricultural Organization, Development and Research, Rome, 1972. Graphs, flow chart, map. 293p.

The Sheep Breeds of the Mediterranean. I.L. Mason. FAO/CAB. Illus., maps. 215p.

The State of Food and Agriculture. World review, review by regions, education and training for development accelerating agricultural research in the developing countries. Rome, 1972. Tables, 189p.

Agricultural Projection Techniques. Papers presented at OECD meeting of exports, October 1971. Paris, 1972.

OTHER PUBLICATIONS

Projection and Impact Models: Area Manpower Planning in the Interlake Region, Manitoba. J.A. MacMillan and Chang-mei Lu. Department of Agricultural Economics and Farm Management, Faculty of Agriculture, University of Manitoba, Winnipeg, Manitoba, November 1972. Map, Tables, Flow Charts. 141p. Research Bulletin No. 72-5.

A Survey of Custom Farm Rates in Ontario, 1971-1972. G.A. Fisher and L.L. Davies. Toronto, Economics Branch, Ontario Ministry of Agriculture and Food, 1972. 18p.

Marketing to Farmers; an Annotated Bibliography. T.F. Funk and F.C. Tarte. Guelph, Ont. 1972. School of Agricultural Economics and Extension Education. Publication AE/72/14.

Farming and Food Supply; the Interdependence of Countryside and Town. J. Hutchinson. Cambridge

University Press, 1972. X, 146p. Illus.

Economic Considerations in Price and Quotas under Regulated Marketing. R.M.A. Loynes. Manitoba University, Dept. of Agricultural Economics and Farm Management. 1972. Illus. 28p. Research Bulletin No. 72-4.

Outline for Valuation of Farm Assets for Capital Gains Tax. Ontario, Ministry of Agriculture and Food. December 1971. Toronto. 13p.

ERRATA

On the cover of the February 1973 issue of Canadian Farm Economics, G.C. Retson and W.L. Hanlon were credited with the article on "Alfafa Seed Production".

This should read as follows:

Alfafa Seed Production
K.D. Russell and B.H. Sonntag.

We regret that this error occurred.

IN REPLY TO AUTHORS AND EDITORS REGARDING APRIL 73
CANADIAN FARM ECONOMICS

I have read the following article(s):

- (1) Instability in the Hog-Pork Industry
- (2) An Approach to the Market Regulation of Broiler Chicken Meat
- (3) Structure of the Canadian Manufacturing Milk and Cream Production Industry
- (4) Trends in Per Capita Food Consumption in Canada (1949-1971)

My comments are on article number

This article was: not useful 1 2 3 4 5 6 7 8 9 10 very useful.

Because (e.g., The most important economic and social factors were studied. The work was well documented and the conclusions were useful to me).

Beefs Bouquets (Suggestions to authors, publications committee and editors)

My comments may () may not () be used in a future issue of this publication if the editor wishes.

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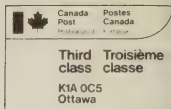
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NUMBER 3

JUNE 1973

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Canadian Farm Economics is published bi-monthly by the Economics Branch, Canada Department of Agriculture, Sir John Carling Building, Ottawa, and is based on material prepared by economists of the Economics Branch.

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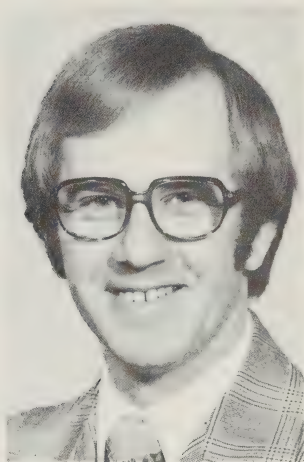
Letters from readers: Letters are encouraged and should be addressed to the author or to the Managing Editor. Responses . . . comments, suggestions and points of view are important for effective two-way communications. Letters may be used in the following issue of CFE and will be edited prior to publication where necessary.

BUCKWHEAT: A CANADIAN SPECIAL CROP

Buckwheat is an important cash crop in Canada, grown mainly for human consumption. A large portion of our production is for the export market, particularly for Japan.

Producer values for 1973-74 could reach over \$4 million at the current contract price of \$2.50 per bushel 1 C.W.

The success of Canadian buckwheat will depend on our abilities to provide the type of buckwheat that the market place demands.



N.L. Longmuir*

INTRODUCTION

Buckwheat appears to have originated from certain wild forms found in China. It was not cultivated in ancient times, but was introduced into Europe during the Middle ages. Its present distribution outside North America is principally in the Northern half of Asia and Europe (Table 1).

Buckwheat was introduced into North America by the Dutch colonists¹ and was grown extensively in the States of New York and Pennsylvania before shifting to Michigan, Maine, Virginia, North Dakota and Montana. In Canada, buckwheat was first grown in New Brunswick and Quebec. Today, about 70 percent of Canadian buckwheat is grown in Manitoba.

Buckwheat, The Cereal that's Not

Buckwheat obtained its name from its resemblance to the beechnut; the German for buckwheat (buckweizen) meaning beechwheat, which was translated into English as buckwheat. Buckwheat is not a cereal from a botanical viewpoint, but because its seed serves the

purpose of cereals and enters into agricultural trade, it is customary to class it with the cereal crops. Its botanical name is *Fagopyrum sagittatum* Gilib. A related form called tartary buckwheat, *F. tataricum* Gaertn., is cultivated in some parts of Eastern Canada but is considered a weed in Western Canada².

PRODUCTION

World acreage of buckwheat has been constant at five million acres for the period 1961 to 1971 (Table 1). However, there has been a forty percent decrease in world acreage since the 1948-52 period. The U.S.S.R. plants about 90 percent of the world acreage and has had lower yields than the other major producing areas such as Europe, Japan and Canada. Canada plants about two percent of world acreage (Table 1).

Acreage of buckwheat in Canada during the period 1960-1972 ranged between 46,600 acres (1960) to 151,800 acres (1970) (Table 2). The general trend has been toward progressively larger acreages. The average annual acreage in the period 1960-64 was 57,300 acres which increased to 73,300 acres in 1965-69. In 1972 the acreage declined to 103,000 acres from the 1970 peak of

*Nelson Longmuir is a special crops Outlook economist with the Marketing and Trade Division of the Economics Branch.

¹Northwestern Miller, July 26, 1933, p. 202.

²S.T. Ali-Khan, *Growing Buckwheat*, Agriculture Canada Publication No. 1468, 1972.

TABLE 1. BUCKWHEAT: ACREAGE, PRODUCTION AND YIELD BY MAJOR PRODUCTION AREAS 1948-1971

Country	Unit	1948-52	1961-65	1967-71
USSR	Area (000 acres)	7297	4537	4621
	Prod. (mil. bus.)	61.0	35.8	60.6
	Yield (bus./acre)	8.3	7.8	13.1
Canada	Area	151	54	101
	Prod.	3.4	1.1	1.8
	Yield	22.8	21.2	18.6
U.S.A.	Area	242	44	17
	Prod.	4.6	.9	.4
	Yield	19.2	21.9	21.6
JAPAN	Area	153	91	52
	Prod.	2.1	1.6	.9
	Yield	14.1	18.1	18.5
EUROPE	Area	642	257	200
	Prod.	8.7	4.3	3.4
	Yield	13.5	16.9	17.4
WORLD	Area	8345	502	5026
	Prod.	75.7	44.1	67.7
	Yield	9.08	8.7	13.5

SOURCE: F.A.O. PRODUCTION YEARBOOK, 1971, p. 80
(Converted from Metric measures)

151,800 acres. Manitoba accounted for 73 percent of the total acreage in 1972, while Ontario and Quebec accounted for ten percent each. In 1972, buckwheat was also produced in New Brunswick and Saskatchewan. A production shift to the West occurred during the Sixties.

Production in this period has ranged from 880,000 bushels³ (1965) to 2.8 million bushels (1970), (Table 2). The average production in the two five-year periods was almost identical, 1,284,000 bushels in 1960-64 and 1,283,000 in 1965-69. Production in 1972 was 1.7 million bushels compared with 2.4 million bushels in the preceding year. Increased acreage was almost entirely offset by declining yields. The average yield in 1965-69 was 17.5 bushels per acre compared with 22.4 bushels per acre in the preceding five-year period. The lowest yield in the entire 1960-1972 period was 16.1 bushels per acre (1965), the highest was 24.7 bushels (1962). The yield from the 1972 crop was 16.6 bushels per acre compared with 21.2 bushels in 1971 (Table 2).

At least two major factors appear responsible for the long term decline in buckwheat yields. Since buckwheat is naturally cross-pollinated and cannot be inbred because of self-incompatibility, improvement is therefore limited through plant breeding. Thus, other grains with steadily increasing yields have gained an advantage.

³ A bushel of buckwheat weighs 48 pounds.

TABLE 2. BUCKWHEAT: ACREAGE, AVERAGE YIELD PER ACRE AND DISPOSITION IN CANADA, 1960-64 TO 1972-73 (CROP YEAR, AUGUST 1 TO JULY 31)

Acreage	Average 1960-64	Average 1965-69	1970-71	1971-72	1972-73
— acres —					
Canada	57,300	73,260	151,800	113,100	102,800
New Brunswick	3,140	2,380	3,500	1,800	2,300
Quebec	17,300	14,860	13,300	9,800	10,000
Ontario	21,020	14,480	10,000	9,900	10,000
Manitoba	15,840	37,540	80,000	80,000	75,000
Saskatchewan	—	2,000	25,000	11,600	5,500
Alberta	—	2,000	20,000	—	—
— bushels —					
Yield per acre (Canada)	22.4	17.5	18.7	21.2	16.6
— bushels —					
Canada					
Production	1,284	1,283	2,833	2,395	1,711
Imports	—	—	—	—	—
Total Supply	1,284	1,283	2,833	2,395	1,711
Exports	309	593	1,799	1,548	n.a.
Available for Domestic Use	975	690	1,034	847	n.a.

TABLE 3. EFFECT OF FERTILIZER NITROGEN ON YIELD, PROTEIN CONTENT AND SEED SIZE OF BUCKWHEAT¹

Treatment lb N-lb. P ₂ O ₅ (added per acre)	Yield (bus./acre)	Protein Content (%)	Seed Size Seeds Greater Than 3 mm. (% by weight)
0-0 ²	9.5	11.1	93
0-40	13.3	11.2	94
20-40	15.8	10.4	93
40-40	22.3	11.6	92
60-40	26.8	11.4	94
80-40	28.5	12.0	93
100-40	32.3	12.1	93
140-40	33.5	12.7	91
180-40	35.0	12.9	92
220-40	34.5	12.9	91

¹ Mean of two experiments conducted on stubble land.

² No fertilizer added.

Source: *Principles and Practices of Commercial Farming*, Faculty of Agriculture, University of Manitoba, 3rd Edition, 1971, pg. 95.

The other factor in this decline is that buckwheat is usually cultivated on marginal land, thus inhibiting yields due to poor land with low fertility.

However, recent experimental work indicates that buckwheat requires a reasonable level of fertility in order to produce a satisfactory yield. Buckwheat responds well to additions of nitrogen and phosphorous fertilizer when grown on stubble land with nitrogen and phosphorous deficiencies. Yields as high as 35.0 bushels per acre have been achieved and above average protein content has been evident (Tables 3 and 4). Since a high protein content and large seed size are desirable characteristics for buckwheat milling, moderate rates of fertilization with nitrogen should increase the quality.

Research by variety selection has been given much emphasis in recent years. The C.D.A. experimental station at Morden, Manitoba has found encouraging results. Yields have averaged 18 bushels per acre which is slightly better than the 1972-73 yield of 16.6 bushels per acre. Research is also being conducted by Dr. G.M. Young at the University of Manitoba to select a more frost tolerant plant originating from a Russian variety.

CANADIAN EXPORT SITUATION

Canada is a net exporter of buckwheat and has increased its exports from 425.2 to 1,196.8 thousand bushels, during the periods 1964-67 and 1968-72. For the period 1963-67, three countries (Netherlands, Japan and U.S.A.) accounted for 82.2 percent of our exports,

TABLE 4. EFFECT OF FERTILIZER PHOSPHORUS ON YIELDS PROTEIN CONTENT AND SEED SIZE OF BUCKWHEAT¹

Treatment lb N-lb P ₂ O ₅ (added per acre)	Yield (bus./acre)	Protein Content (%)	Seed Size Seeds Greater Than 3 mm. (% by weight)
100-0	22.0	12.1	93
100-20	32.0	12.0	92
100-40	32.3	12.1	93

¹ Mean of two experiments.

Source: *Principles and Practices of Commercial Farming*, Faculty of Agriculture University of Manitoba, 3rd Edition 1971, p. 95.

Figure 1. The same three countries during the period 1968-72 accounted for 96.9 percent of our exports. The Japanese market has increased from about 23 percent to 77 percent of our total exports of buckwheat. The average price for the period 1968-71 has increased over the period 1963-67, indicating that the Japanese are willing to pay more for our buckwheat to meet their increasing needs. The Netherlands share of Canadian Exports has decreased from 56 percent (1963-67) to 11 percent (1968-72). This has occurred partly because of the European Economic Community's Common Agricultural Policy which encourages supplying needs from within.

The total value of buckwheat exports have increased from 741.8 thousand to 2,581.6 thousand dollars for the periods 1963-67 to 1968-72 (Table 5).

The average export value of buckwheat has ranged from \$1.35 per bushel in 1965 to \$3.19 per bushel in 1968 (Table 6). For the period 1963-67, the Netherlands paid an average price of \$1.49 per bushel and purchased an average quantity of 238,876 bushels. During 1968-72 the price increased to \$1.75 per bushel and the quantity bought declined to 117,585 bushels per year. Our largest market at present is the Japanese market with purchases averaging 99,970 bushels during the 1963-67 and increasing to 927,155 bushels per year during 1968-72. Moreover, the average price has increased from \$2.13 per bushel in 1963-67 to \$2.26 per bushel in 1968-72.

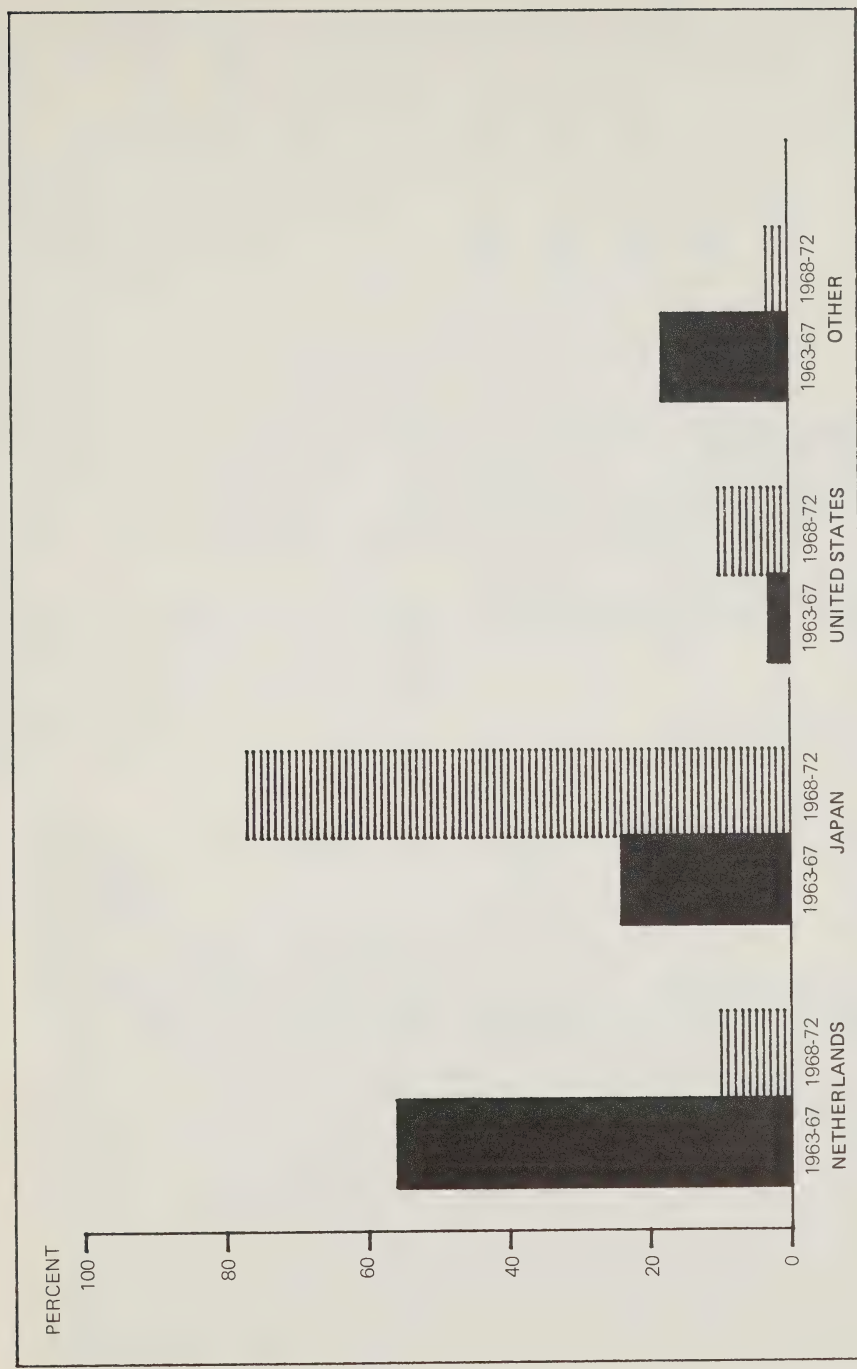
CONSUMPTION AND TRADE

Per capita consumption of buckwheat flour in Canada is currently estimated at 0.2 pounds 1967-71 and is expected to remain there for a few years. The U.S. per capita consumption is estimated at 0.10 pounds (1965) and is expected to increase to about 0.20 pounds, if the surge in imports from Canada is any indication of U.S.

TABLE 5. BUCKWHEAT: EXPORTS AND VALUES, BY DESTINATION 1963-1972

Destination	1963			1964			1965			1966			1967			1963-1967		
	Quantity	Value		Quantity	Value		Quantity	Value		Quantity	Value		Quantity	Value		Quantity	Value	
	bus.	\$000		bus.	\$000		bus.	\$000		bus.	\$000		bus.	\$000		bus.	\$000	
United Kingdom	3,260	6		2,273	5		427	3		—	—		183	1		1,288	3.0	
Netherlands	—	—		493,446	705		479,658	620		112,202	199		109,073	258		238,876	356.4	
Israel	—	—		—	—		—	—		1,172	2		2,079	4		650	1.2	
Japan	—	—		—	—		47,077	71		132,360	220		320,415	776		99,970	213.4	
United States	26,771	59		3,240	11		4,804	16		—	—		19,229	34		10,809	24.0	
Belgium-Lux	—	—		56,281	107		37,425	55		8,350	27		1,475	3		20,706	38.4	
France	—	—		—	—		50,575	75		9,104	16		48,767	134		21,689	45.0	
West Germany	—	—		—	—		—	—		23,689	59		—	—		4,734	11.8	
Switzerland	—	—		—	—		—	—		10,944	22		—	—		2,189	4.4	
Italy	1,271	2		—	—		—	—		119,117	214		1,400	5		24,358	44.2	
Total	31,302	67		555,240	828		619,967	840		416,919	759		502,621	1,215		425,210	741.8	
Destination	1968			1969			1970			1971			1972			1968-1972		
	Quantity	Value		Quantity	Value		Quantity	Value		Quantity	Value		Quantity	Value		Quantity	Value	
	bus.	\$000		bus.	\$000		bus.	\$000		bus.	\$000		bus.	\$000		bus.	\$000	
United Kingdom	1,229	9		617	4		823	7		4,308	10		254	2		1,446	6.4	
Netherlands	26,125	79		46,667	88		81,200	142		264,525	421		169,412	302		117,585	206.4	
Israel	1,165	2		—	—		3,590	11		1,833	3		—	—		1,317	3.2	
Japan	429,975	1,378		555,417	1,424		1,242,904	2,821		1,162,354	2,281		1,245,124	2,604		927,155	2,101.6	
Australia	—	—		—	—		4,033	10		—	—		140	1		843	2.2	
United States	4,467	13		42	20		21,252	31		201,044	342		342,396	661		115,616	214.6	
Belgium-Lux.	—	—		—	—		—	—		—	—		—	—		—	—	
France	—	—		36,475	51		—	—		—	—		24,222	37		12,139	17.6	
West Germany	—	—		—	—		—	—		—	—		—	—		—	—	
Switzerland	—	—		—	—		—	—		—	—		101,990	144		20,398	28.8	
Italy	1,840	4		—	—		—	—		—	—		—	—		368	0.8	
Total	464,792	1,485		648,135	1,587		1,353,802	3,022		1,634,065	3,057		1,883,538	3,757		1,196,866	2,581.6	

FIGURE 1. BUCKWHEAT: DISTRIBUTION OF EXPORTS, 1962-66 and 1967-71



SOURCE: Based on data from Statistics Canada, TRADE OF CANADA

TABLE 6. BUCKWHEAT: AVERAGE EXPORT VALUE PER BUSHEL, BY DESTINATION 1963-1972

Destination	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1963-67	1968-72
— \$/Bushel —												
United Kingdom	1.84	2.19	7.02	—	5.45	7.32	6.48	8.50	2.32	7.87	2.44	4.42
Netherlands	—	1.43	1.29	1.77	2.36	3.02	1.88	1.74	1.59	1.78	1.49	1.75
Israel	—	—	—	1.70	1.92	1.72	—	3.06	1.63	—	1.84	2.42
Japan	—	—	1.51	1.66	2.42	3.20	2.56	2.27	1.96	2.09	2.13	2.26
Australia	—	—	—	—	—	—	—	2.48	—	7.14	—	2.60
United States	2.20	3.39	3.33	3.23	1.76	2.90	2.24	1.46	1.69	1.95	2.22	1.85
Belgium-Lux.	—	1.90	1.47	1.75	2.03	—	—	—	—	—	1.85	—
France	—	—	1.48	2.49	2.75	—	1.39	—	—	1.52	2.07	1.45
West Germany	—	—	—	2.01	—	—	—	—	—	—	2.49	—
Switzerland	—	—	—	1.79	—	—	—	—	—	1.41	2.01	1.41
Italy	1.57	—	—	—	3.57	2.17	—	—	—	—	1.82	2.17
Total	2.14	1.49	1.35	1.82	2.41	3.19	2.44	2.36	1.87	1.99	1.74	2.15

demand. This recent increase in trade with the U.S. was facilitated by the gradual reduction in U.S. production since 1965 and the reduction and eventual removal of U.S. import duties on buckwheat in 1968. It was estimated that in 1965 Canada supplied about four percent of U.S. consumption (10,000 bushels) and in 1972 Canada supplied about 35 to 40 percent of their total consumption (340,000 bushels). However, the U.S. is not the principal export market for Canadian buckwheat.

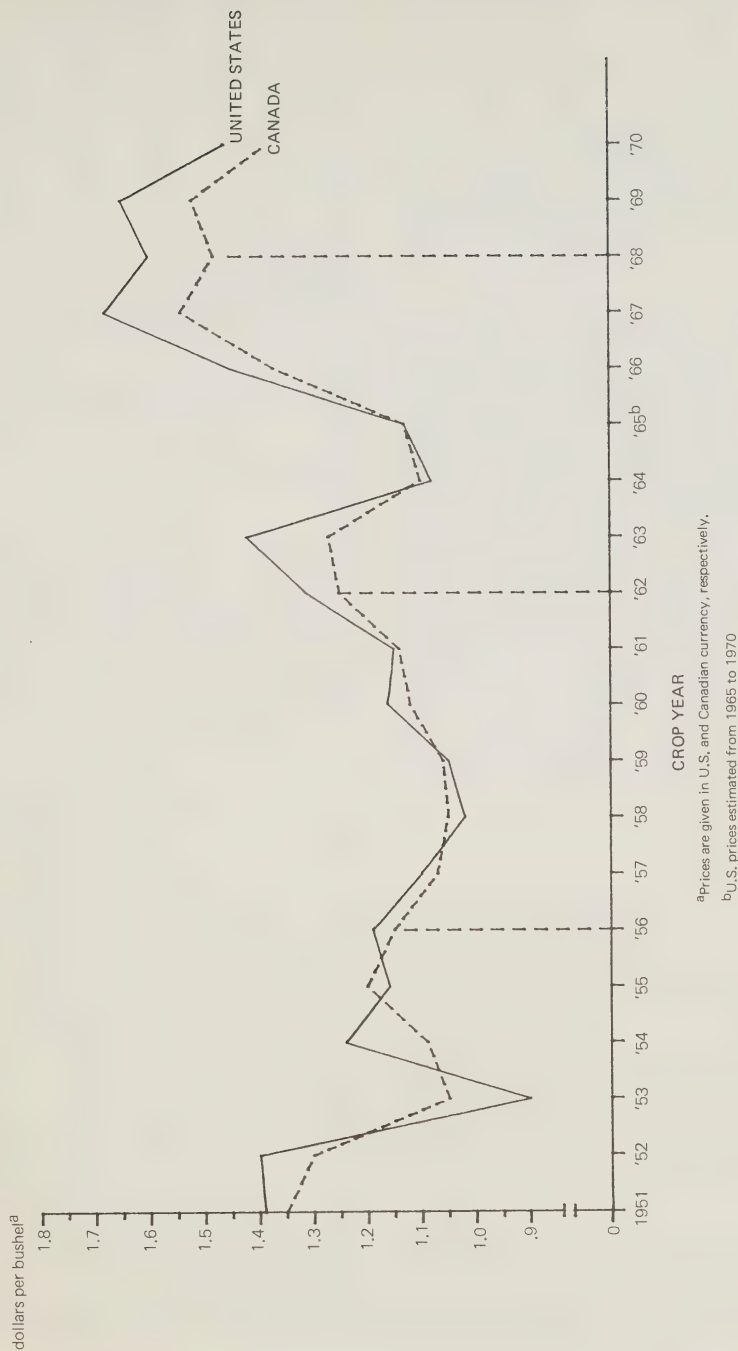
Japan has been our largest market since 1967 and accounted for 1.2 million bushels in 1972. Annual consumption of buckwheat in Japan was recently

estimated to be 2.5 to 2.8 million bushels. Canada supplied about 44 percent of Japan's needs in 1972. Japan produces about 920,000 bushels (Table 1) and purchases about 460,000 bushels from the Peoples Republic of China and the remainder 1.1 to 1.4 million bushels from Canada.

Buckwheat is consumed by the Japanese in the form of "soba" (buckwheat noodles) and quality is judged according to the flavour of the buckwheat. One factor which determines the flavour of buckwheat is the greenness of colour next to the skin on the endosperm. Because old buckwheat loses this greenness, the Japanese dislike old crops. Any tendency on the part of the



FIGURE 2. BUCKWHEAT: PRICES RECEIVED BY FARMERS, UNITED STATES AND CANADA, 1951-1970



^aPrices are given in U.S. and Canadian currency, respectively.

^bU.S. prices estimated from 1965 to 1970

SOURCE: Based on data from Statistics Canada, Quarterly Bulletin of Agricultural Statistics and Statistical Reporting Services, Field Crops, Acreage, Yield and Production, U.S.D.A.

Canadian trade to mix old and new seed could have a detrimental effect on future Japanese purchases and prices of this crop.

Ideally, buckwheat exported to Japan should have a moisture content of 15 percent, large, uniform seed size and should be relatively free of weed seeds. A recent analysis of buckwheat shipments to Japan showed that Canadian cargoes contained the smallest seed size of the exporting countries and had the highest weed content. Buckwheat, from the Peoples Republic of China, on the other hand, had the largest seed size.

PRODUCERS RETURNS

The gross farm value from the production of buckwheat in Canada, in the period 1960-64, averaged \$1.5 million and increased to \$1.8 million during 1965-69. However, in 1965 a low income of \$1 million biased the 1965-69 average downward. The buckwheat crop of 1970-71 was worth \$3.9 million to Canadian farmers compared to \$2.6 million in 1969-70.

A comparison of farm prices in Canada and the United States discloses the strong relationship between prices in the two countries (Figure 2). This is not surprising in view of the close proximity of the two producing areas (i.e. Minnesota and North Dakota to Manitoba) and the elimination of all trade barriers on buckwheat since 1968. Buckwheat prices have moved upward in the last four years, indicating the renewed interest in this commodity in North America⁴ as well as a strong export market.

ADAPTABILITY

Buckwheat is a popular cash crop in certain areas of Canada (especially Manitoba). It requires a growing season of about ten to twelve weeks and will grow under a wide range of conditions, but is best adapted to well drained sandy loam soils. Heavy soils which are poorly drained and sandy soil, subject to drought, are usually avoided. It is also very sensitive to extremes in temperature and should be planted after the danger of frost has past in late May or early June. The use of bees for a greater degree of pollination has been found very beneficial for increased yields⁵.

⁴F.R. Gomme, "Buckwheat: A Look at its Prospects and Problems" *Wheat Situation* W.S. 220, May 1972, U.S.D.A. Economic Research Service.

⁵J.R. Rogalsky, "Quality Buckwheat For Japan", *Manitoba Co-operator*, March 8, 1973, p. 2a.

TABLE 7. BUCKWHEAT: YIELD DATA IN HUNDREDWEIGHT PER ACRE

Variety or Selection	1970	1971	1972	Average
Tokyo	15.2	12.8	25.3	17.8
Tempest	12.2	12.2	27.8	17.4
CD 6183	13.4	15.6	29.1	19.4
CD 1370-61-4	15.7	12.1	26.2	18.0
MB-1	—	12.4	23.7	18.1
Pennquad	—	10.2	17.7	14.0

Tokyo and Tempest are the two recommended varieties in Canada. Tokyo originated from a Japanese variety and has large seeds with black hulls. Tempest was selected from a Russian introduction and outyields Tokyo by about ten percent (Table 7). The seed size is slightly smaller than Tokyo, but Japanese millers have reported that flour milled from Tempest is acceptable in taste and flavor.

USES OF BUCKWHEAT

Buckwheat has never been considered a major source of food. However, most Canadians are familiar with it in the form of pancake mixes which contain approximately 40 percent buckwheat flour in addition to wheat and other flours. Normally 60 pounds of flour is obtained from 100 pounds of buckwheat. In other words, a hundredweight of buckwheat grain could furnish enough flour to produce about 143 one pound boxes of buckwheat pancake mix.

Buckwheat has recently enjoyed a resurgence in popularity as a result of the current interest in "natural" foods. This is due in part to its high nutritional value which is equal or superior to many of the better known cereals. Buckwheat is an excellent source of protein, from 11 to 15 percent (more than corn, barley and oats) and also has adequate amounts of vitamin B6. It is

BUCKWHEAT: 1000 SEED WEIGHT IN GRAMS

Variety or Selection	1970	1971	1972	Average
Tokyo	23.7	23.3	22.0	23.0
Tempest	20.7	21.3	20.8	20.9
CD 6183	20.0	22.3	21.4	21.2
CD 1370-61-4	19.6	22.3	21.8	21.2
MB-1	—	29.0	28.2	28.6
Pennquad	—	33.8	32.1	33.0

The 1970 and 1972 data are from Morden, Portage and Brandon and the 1971 data are from Morden, Portage, Brandon and Winnipeg.

Source: C. Campbell, C.D.A. Research Station, Morden, Manitoba.

relatively inexpensive and can be both filling and nourishing. It can be prepared in a variety of ways; such as stuffing for poultry, various breads, or mixed with honey, raisins and dates as a “natural” breakfast food. It can also replace rice or potatoes in the main course of a meal. Buckwheat is often utilized as a groat (that part of the Kernel that is left after the hull is removed) in puddings, cakes and beer. Buckwheat is one of the best crops for honey, because it blooms for over 30 days and an acre can supply enough nectar to produce about 125 pounds of honey.

The grain and straw can be used for livestock feed. Using percentage lypine as a standard of quality, buckwheat compares to cereals as follows:

<i>GRAIN</i>	<i>% LYPINE</i>
Buckwheat	.62
Oats	.50
Barley	.53
Wheat	.45
Corn	.18

However, the total nutritive value is less than that of cereals and the seed contains a substance harmful to animals if fed too much.

Buckwheat can be used as a smother or catch crop as well as a green manure crop. There is even a medicinal use for buckwheat leaves and flowers which contain rutin, a chemical used to reduce high blood pressure.

CONCLUSIONS

The future growth of the Canadian buckwheat industry appears to be tied to the growth in population in North America, Europe and Japan. There also appears to be a potential for growth in the “natural” foods industry provided that favorable reception for newly developed products improves.

It would appear that the Canadian share of the Japanese market could be increased if the desired product can be supplied on a continuous basis. Moreover, the Japanese preference for large seeded buckwheat has revised the aim of Canadian buckwheat breeders. Their efforts are now being concentrated toward the development of a high quality, high yielding, large seed variety to suit the Japanese market. In order to insure that adequate supplies of buckwheat are available, contract prices have been established at about \$2.50 per bushel. In order to maintain and develop our markets for buckwheat, Canadian producers, breeders and marketing firms must coordinate their efforts to provide a high quality product for the market during the 70's.

FARM FEEDLOT COSTS AND RETURNS



M.M. Sorboe*

Two systems of farm feedlot operation predominated on the sample farms; winter finishing of calves over a period of 180 to 200 days and short-feeding of yearlings for 90 to 100 days.

Many farm feedlot operators fear a takeover by large commercial enterprises. However, there is no evidence that one kind of operation has an overall competitive advantage.

INTRODUCTION

Experienced cattle feeders can forecast weight gains with a high degree of accuracy. Within limits, "programmed feeding" will produce gains closely approximating those anticipated. Calves, fed to finish in six months, will gain 360 to 450 pounds. Heavier animals, yearlings for example, can be expected to put on 250 to 300 pounds in a 100-day feeding period. Such physical input-output ratios or "coefficients" are well established for cattle feeding and rarely change or only slowly. They can be applied to beef production estimates with confidence, on a continuing basis.

Financial returns from cattle finishing, on the other hand, are very unpredictable. The prices of feeder and slaughter cattle fluctuate, seemingly independent of one another. In addition, feed prices are highly variable and other factor input prices are subject to change from one feeding period to another.

COSTS AND RETURNS

Samples of farm feeders' costs and returns are shown in the accompanying tables. The input-output data is

derived from information supplied by 24 grain-beef cattle farmers who maintain farm feedlot enterprises. The operators are located in the parkland region of north-west Saskatchewan. Their cattle purchasing and selling activities take place mainly in the auction markets at Lloydminster and North Battleford. Two systems of farm feedlot operation predominate; winter finishing of calves over a period of 180 to 200 days and short-feeding of yearlings for 90 to 100 days. The main feed input is home-grown barley.

Prices of feeders and finished cattle (in brackets) are the respective average monthly price levels based on the Saskatoon market. Feed barley prices are the average farm values per bushel over the feeding periods. Other production costs were adjusted from the 1972 level by using indexes of farm input prices¹.

Table 1 shows the estimated costs and returns for farm-fed steer calves weighing 430 pounds when placed in the feedlot in the fall and finishing at 790 pounds when sold in the spring (April, May and June). In 1970 and 1971, with the exception of April 1970², these

¹ p.1, Farm Input Price Indexes, Statistics Canada, Catalogue 62-004.

² Management returns (residual return to the operator for his management ability) was \$2.80, -\$2.34, -\$10.62 per steer respectively for April, May and June 1970.

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TABLE 1. SASKATCHEWAN FARM FEEDERS' COSTS AND RETURNS (FINISHED CALVES — 180 DAY PERIOD)

Month of Sale	1971			1972			1973 (Projected)		
	April	May	June	April	May	June	April	May	June
— dollars per animal —									
Return to feeder — sale value of									
790 pound choice steer	(31.99) ¹	(32.73)	(32.75)	(34.85)	(36.25)	(36.35)	(42.00)	(42.50)	(42.50)
basis Saskatoon prices	252.72	258.57	258.72	275.32	286.38	287.16	331.80	335.75	335.75
Cost of 430 pound feeder calf	(36.91) ²	(38.53)	(38.20)	(40.13)	(40.56)	(41.35)	(41.89)	(48.27)	(48.40)
six months earlier	158.71	165.68	164.26	172.56	174.41	177.80	205.93	207.56	208.12
Gross margin	94.01	92.89	94.46	102.76	111.97	109.36	125.87	128.19	127.63
Feed costs — varied by price	(.91) ³	(.90)	(.88)	(.68)	(.69)	(.70)	(1.05)	(1.11)	(1.10)
of barley and other feeds ⁴	55.13	54.68	53.78	44.94	45.39	45.84	61.89	64.59	64.14
Transportation costs ⁵	6.37	6.37	6.37	6.71	6.71	6.71	7.00	7.00	7.00
Terminal expenses ⁶	2.75	2.75	2.75	3.00	3.00	3.00	3.25	3.25	3.25
Veterinary services, drugs, death									
loss ⁷	6.11	6.24	6.23	6.48	6.61	6.65	7.38	7.43	7.44
Overhead — labor	9.72	9.72	9.72	10.50	10.50	10.50	11.42	11.42	11.42
— depreciation and repairs	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20
Interest — 8% on animal and feed	8.63	8.89	8.80	8.78	8.87	9.03	10.79	10.97	10.97
Cost of Production (360 pounds)	95.91	95.85	94.85	87.61	88.28	88.93	108.93	111.86	110.86
Return to management	-1.90	-2.96	-0.39	15.15	23.69	20.43	16.94	16.33	16.77
— cents per pound —									
Cost of gain ⁸	26.64	26.62	26.35	24.34	24.52	24.70	30.26	31.07	30.79
Break-even price ⁹	32.23	33.11	32.80	32.94	33.26	33.77	39.86	40.43	40.38

¹ Price in cents per pound or dollars per hundredweight (cwt.) for choice steer basis Saskatoon for the months shown.

² Cost in cents per pound or dollars per hundredweight (cwt.) for good feeder calves six months earlier basis Saskatoon.

³ Average farm price of barley per bushel over the feeding period.

⁴ Includes barley, hay, straw for bedding, minerals and supplements, milling costs.

⁵ Based on current rate of \$0.55 per cwt. varied by custom work index change, Statistics Canada.

⁶ Average costs from current study 1971-72.

⁷ Death loss equals two percent of average value of animal.

⁸ Cost of production divided by 360 pounds.

⁹ Cost of feeder calf plus cost of production divided by 790 pounds.

operators lost money, but in 1972 management returns reached a high of \$23.69 per head. The cost of gain closely followed the trend of grain prices reaching a level of more than 26 cents a pound in 1971 and then dropping back to about 24.5 cents in 1972. More recently, the cost per pound of gain has reached the 30 cent level. The break-even price for steers sold, which indicates zero returns for management, rose gradually from about 31 cents a pound in 1970 to near 34 cents in 1972. It has now reached the 40 to 41 cent level. If the present price of 42 to 43 cents for choice steers holds, the current (1972-1973) crop of fed calves should yield a net return of \$16.00 to \$17.00 per head.

Table 2 shows management returns on farm-fed yearling steers weighing in at 750 pounds and finishing at 1,000 pounds in 100 days. The cyclical pattern and high variation in management returns is evident in the range

from a loss of \$26.27 in 1970 to a gain of \$24.08 in 1971 and to a subsequent loss of \$31.86 a steer in 1972. Cost of gain followed the trend of grain prices, dropping from about 30 cents a pound in 1970 to 28 cents in 1971 and then increasing to more than 33 cents a pound in 1972. A sharp increase in the cost of gain is expected to occur in 1973 as a result of the current buoyancy of the grain market. Following the trend to lightweight steers, the break-even price for "short-fed" heavies rose from about 30 cents in 1970 to near 36 cents a pound in 1972. The trend will likely continue into the 40 cent range in 1973.

Many farm feedlot operators fear a takeover by large commercial enterprises. There is no evidence, however, that one kind of operation has an overall competitive advantage. Each type has certain characteristics that give it advantages. Farm feedlot labor, usually supplied by

TABLE 2. SASKATCHEWAN FARM FEEDERS' COSTS AND RETURNS (FINISHING YEARLINGS – 100 DAY PERIOD)

Month of Sale	1970			1971			1972		
	Oct.	Nov.	Dec.	Oct.	Nov.	Dec.	Oct.	Nov.	Dec.
— dollars per animal —									
Return to feeder — sale value of 1,000 pound choice steer basis Saskatoon prices	(27.83) ¹	(29.16)	(29.35)	(31.22)	(32.54)	(34.02)	(32.30)	(35.37)	(36.63)
	278.30	291.60	293.50	312.20	325.40	340.20	323.00	353.70	366.30
Cost of 750 pound steer — 100 days earlier	(30.91) ²	(29.87)	(29.76)	(32.25)	(32.45)	(32.84)	(36.79)	(36.70)	(36.84)
	231.82	224.02	223.20	241.88	243.38	246.30	275.92	275.25	276.30
Gross margin	46.48	67.58	70.30	70.32	82.02	93.90	47.08	78.45	90.00
Feed costs — varied by price of barley and other feeds ⁴	(.79) ³	(.85)	(.89)	(.70)	(.66)	(.67)	(.84)	(.88)	(.94)
	41.58	43.98	45.58	38.33	36.73	37.13	44.10	45.70	48.10
Transportation costs ⁵	8.84	8.84	8.84	9.13	9.13	9.13	9.62	9.62	9.62
Terminal expenses ⁶	3.34	3.34	3.34	3.67	3.67	3.67	4.00	4.00	4.00
Veterinary services, drugs and death loss ⁷	3.15	3.18	3.18	3.37	3.44	3.53	3.59	3.74	3.81
Overhead — labor	4.93	4.93	4.93	5.18	5.18	5.18	5.60	5.60	5.60
— depreciation and repairs	4.90	4.90	4.90	4.95	4.95	4.95	5.00	5.00	5.00
Interest — 8% on animal and feed	6.01	5.89	5.90	6.16	6.15	6.23	7.03	7.05	7.12
Production Cost (250 lbs.)	72.75	75.06	76.67	70.79	69.25	69.82	78.94	80.71	83.25
Return to management	-26.27	-7.48	-6.37	-0.47	12.77	24.08	-31.86	-2.26	6.75
— cents per pound —									
Cost of gain ⁸	29.10	30.02	30.67	28.32	27.70	27.93	31.58	32.28	33.30
Break-even price ⁹	30.46	29.91	29.99	31.27	31.26	31.61	35.49	35.60	35.96

¹ Price in cents per pound or dollars per hundredweight (cwt.) for choice steer basis Saskatoon for months shown.

² Cost in cents per pound or dollars per hundredweight (cwt.) for good feeder steers 100 day earlier basis Saskatoon.

³ Average farm price of barley per bushel over the feeding period.

⁴ Includes barley, hay, straw for bedding, minerals and supplements, milling costs.

⁵ Based on current rate of \$0.55 per cwt. varied by custom work index change, Statistics Canada.

⁶ Average costs from current study 1971 and 1972.

⁷ Death loss equals one percent of average value of animal.

⁸ Production cost divided by 250 pounds.

⁹ Cost of steer plus production cost divided by 1,000 pounds.

the operator or his family, is frequently available at times that are not competitive with the labor requirements of other farm enterprises. As such, it may have no alternate economic value. Depreciation on fixed assets are often absorbed, at least in part, by the main farm business. The operator may also discount interest charges on feeders and feed if they are produced on his farm. In addition, the farm feedlot, as a supplementary operation, offers more flexibility in its operation than large self-sustaining feedlots.

Shareholders in commercial feedlots rely mainly on size of operation, high turnover and superior management to produce lower unit costs. They can usually offset some of the risk of price changes by buying and selling cattle many times during the year. By dealing in large quantities of cattle and feed, some price bargaining advantages can be gained. Through some of these means

shareholders in large feedlots can, in the long run, obtain a competitive return on their investment.

CONCLUSION

The examples cited show that net returns to feeders are extremely variable from one feeding period to another. In the short run a feeder may suffer an appreciable loss or he may realize a substantial profit. In the long run, however, a satisfactory or "normal" return to capital and labor should be realized.

Feeder management return on steer calves, sold in April, May and June 1970 to 1973, was negative for five of the 12 transactions. It was negative for six of the nine lots of yearling steers sold in the fall. This means that the operators failed to "break-even" on 11, or more than one-half of the 21 lots of cattle.

Assuming a constant number of animals in each lot, management averaged \$7.82 per head on calves and lost \$2.99 per animal. The average return to management on all fed cattle was an average of \$3.46 per head on yearling steers. The



SOME ECONOMIC ASPECTS OF DELAYED GRAZING ON NATIVE RANGE PASTURE



Cattle grazing is the main product of native range pasture in the Brown and Dark Brown soil zone of the Prairies.

The productivity of native range pasture normally grazed until mid-October can be increased by 23 percent when the grazing is started in early June instead of mid-May.

J.K. Wiens*



R.W. Lodge**

INTRODUCTION

The Brown and Dark Brown Soil Zones of Alberta and Saskatchewan¹ provide an important grazing resource for cattle enterprises. In 1971, there were 17.1 million acres of unimproved pasture in the Census Divisions that are completely or mainly in these zones. This acreage is primarily native range pasture. Alternate uses for this land are limited due to the topography, soil texture, soil structure and location.

For the purposes of this study, the Brown and Dark Brown Soil Zones of Alberta and Saskatchewan were designated as the study area. The study examines the economics of delayed grazing² from the normal³ mid-May start under current and hypothetical input and output prices. The primary source data includes 1970 survey records of grain-cattle farms in Census Division 4

in Saskatchewan, other farm survey records and research data from the Swift Current Research Station, including unpublished data. The primary data were used to develop input-output coefficients for "above-average" management. These coefficients were then used to develop the required partial farm budgets needed to evaluate the economics of delayed grazing of native range pasture.

Background

In addition to the unimproved pasture, there are 1.5 million acres of improved pasture in these zones, some of which could be native range pasture. Both grain stubble and wasteland are also used for grazing but use is limited to early spring or late fall grazing.

Another source of feed for the cattle enterprise is harvested feeds, such as hay and grain. Where harvested feed production has to compete with grain production for land resources, the land cost for producing this feed is dependent upon the price of grain and the non-land costs of producing grain. In 1966, 71 percent of the field

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¹Census of Canada, Agriculture, 1971, Statistics Canada. This is the area designated for the purposes of this study.

²Delayed grazing occurs when grazing is not started on a pasture until after mid-May.

³The normal grazing period of pasture is mid-May to mid-October.

**Dr. Lodge is an expert in range management and a former employee of the Research Branch at the Swift Current Research Station. He has recently been appointed Chief of Land Use Service for the Prairie Farm Rehabilitation Administration.

crop area in Census Division 4 in southwestern Saskatchewan was wheat and in 1971 it was 62 percent. Thus, wheat, because of the overriding importance in land use, can be considered as a base commodity which sets the general price level of the arable land. Since most of the livestock winter feed supply is also produced on arable land, the cost of winter feed is positively related to the price of wheat.

It has not been economical to produce feeder cattle in the area, with harvested feed alone. Low-cost grazing is needed, but its availability has been a factor limiting the size of cattle enterprises. As a result, the value of such grazing and the method used are determined by the price of cattle and the costs of the other inputs which makes it a residual return or a return to a fixed resource (rangeland). This return is shown in both Figure 1 and Table 1. The budgets that determine the return are based on information obtained from a 1970 farm survey of grain-cattle enterprises in Census Division 4, Saskatchewan. The price of feeder cattle for the five-year period, 1968-1972, is much higher than for any other previous five-year period (Table 2) while the price of wheat (an indicator of the price of harvested feeds) is lower than for the two previous five-year periods. The result has been an increasing return to native range pasture (Table 1) which has been capitalized into the value of the native rangeland. High cattle prices, relative to wheat prices, generally means a narrowing of the price spread between harvested feeds and native range pasture. The increasing price ratio of cattle to grain (Table 2) is changing the economics of rangeland use.

ECONOMICS OF DELAYED GRAZING

Increased Production from Delayed Grazing

Delayed grazing in the spring⁴ has been shown to increase the carrying capacity⁵ of native range pasture. Research data (Table 3) based on mechanical clipping at two-week intervals and different starting dates were used to estimate the increased carrying capacity from delayed grazing. However, such data were not directly comparable with yields under grazing as (a) most of the growth was harvested at the end of each two-week period instead of some being grazed each day for the normal grazing period and (b) the grass was clipped rather than grazed. In making estimates of the increased carrying capacity that results from delayed grazing, the following assumptions were made:

⁴Spring grazing is defined as grazing during the delayed grazing period.
⁵Campbell, J.B., "Farming Range Pastures", Journal of Range Management, Vol. 5, No. 4, July 1952.

1. The yield increase of 83.3 percent that occurred (Table 3) when clipping was delayed to July 5, can be divided into three parts:

- (a) A 60.4 percent increase when clipping was delayed until June 5,
- (b) A further 10.4 percent increase when clipping was delayed until June 20, and
- (c) An additional 12.5 percent increase when clipping was delayed until July 5.

2. The effect of clipping on yields within these time periods can be interpolated by fitting a curvilinear relationship to above data.

3. The in-season growth of dry matter is shown in Table 4.

4. Grazing will have the same effect as clipping on subsequent grass growth.

5. Feed or grazing requirements per day are constant throughout the season.

On the above basis, the estimated benefit from the shorter grazing season, June 6 to October 15, compared with the normal grazing period of pasture is an increased carrying capacity of 23 percent. A further delay in grazing until June 20 will increase the native range carrying capacity by another two percent. The monetary value of these benefits then depends on the value of an animal unit month of grazing and the alternate feed costs during the delayed grazing period.

TABLE 1. ESTIMATED RETURNS PER COW-CALF UNIT, SOUTHWESTERN SASKATCHEWAN 1965 TO 1971

Year	Gross Return	Return to Labor and Summer Pasture	Labor Allowance	Return to Summer Pasture
— \$ per cow-calf unit —				
1965	84.79	17.64	10.94	6.70
1966	103.06	33.64	12.05	21.59
1967	108.70	34.91	13.11	21.80
1968	109.74	30.02	13.86	16.16
1969	133.39	51.43	14.56	36.87
1970	142.68	57.74	14.91	42.83
1971	152.17	63.90	15.70	48.20
1972	172.60	74.86	17.01	57.85

TABLE 2. FARM PRICE OF WHEAT, STOCKER STEERS AND GOOD STEER CALVES

Year	Wheat No. 1 (22¢ freight zone)	Good Feeder Steers (September to November at Calgary)		Good Feeder Steer Calves (September to November at Calgary)	
	— \$ per bushel ¹ —	— \$ per cwt. —	index ²	— \$ per cwt. —	index ³
1948-52	1.64	23.30	14	n.a.	
1953-57	1.43	16.43	11	n.a.	
1958-62	1.57	22.09	14	n.a.	
1963-67	1.75	23.30	13	26.18	15
1968	1.51	26.68	18	30.38	20
1969	1.38	30.31	22	37.37	27
1970	1.48	31.19	21	39.92	27
1971	1.45	34.29	24	43.29	30
1972	1.75 ⁴	38.21	22	49.16	28
1968-72	1.51	32.14	21	40.02	26

¹Wheat sold to Canadian Wheat Board and for crop year starting in year indicated.

²Number of bushels of wheat equal to 100 pounds of good feeder steers.

³Number of bushels of wheat equal to 100 pounds of good feeder steer calves.

⁴Estimate of farm to farm sales value.

Value of an Animal Unit Month of Grazing

This value can be estimated as a cost of the value placed on it in the market place or by estimating a return to pasture on the basis of a cattle enterprise budget.

Native range pasture is an important source of summer grazing in the area. It is obtainable through a variety of tenure arrangements; government operated pastures, cooperative pastures that lease government owned land and/or privately owned land and individually operated pastures on leased or owned land. The value of a unit of grazing varies between these tenure arrangements; there is also a large variation in cost within some of them.

In 1972, the Department of Regional Economic Expansion under the Prairie Farm Rehabilitation Act charged \$12.00 for five months of grazing (\$2.40 per month) for a cow with calf. Grazing costs are somewhat higher than this for cooperative and individually leased pasture and much higher for deeded pasture.

TABLE 3. PRODUCTION OF MIXED GRASS PRAIRIE AT SWIFT CURRENT BASED ON CLIPPED PLOT YIELDS¹ (1948-51)

Date of First Clipping	Summer Yield lb./acre (D.M.)
May 16	240
June 5	385
June 20	410
July 5	440
July 20	360

¹Plots were clipped at two-week intervals from the date of first clipping until September 1.

Source: J.B. Campbell, "Farming Range Pastures".

The cost of summer grazing on deeded native range pasture is estimated at \$6.45 per cow-calf unit month. This includes fencing, water development costs, land taxes and the interest on capital invested. These costs vary from farm to farm. For this estimate, the first two cost items are calculated at 47 cents per acre. The land tax is dependent on the assessment and the mill rate. If land is assessed at \$3 per acre and the mill rate is 70, the annual tax amounts to 21 cents per acre. Interest charges vary according to the interest rate and the market value of land. Land sales data for 1972 show that native rangeland values are from four to 12 times the assessment. The higher multiples are for land with low assessment. Using an assessment multiple of seven on land valued at \$3 per acre and a seven percent interest rate, the land investment is \$1.47 per acre. On this basis the total pasture costs are \$2.15 per acre. Native pasture that produces 400 pounds of dry matter per acre (Table 4) and is grazed at the recommended⁶ rate of 55 percent of production has a grazeable yield of 220 pounds of dry matter per acre. The estimated T.D.N. per pound of dry matter is .6 pounds. Thus, the estimated grazeable T.D.N. per acre is 132 pounds and the estimated grazing requirements for a cow plus calf are three acres each month. As previously stated, the value of this grazing is equivalent to (three acres per cow-calf unit month times \$2.15 per acre) \$6.45 per cow-calf unit month.

The value of summer grazing on native range pasture can also be expressed as a residual return from the cow-calf enterprise (Table 1). An important factor in determining this return is the cost of winter feed. One factor

⁶Lodge, R.W., Campbell, J.B., Smoliak, S., Johnston, A., Management of the Western Range, Canada Department of Agriculture, Publication 1425, 1971.

**FIGURE 1. RETURN TO PASTURE PER COW-CALF UNIT
MONTH OF SUMMER GRAZING**

Dollars per Cow-Calf Unit

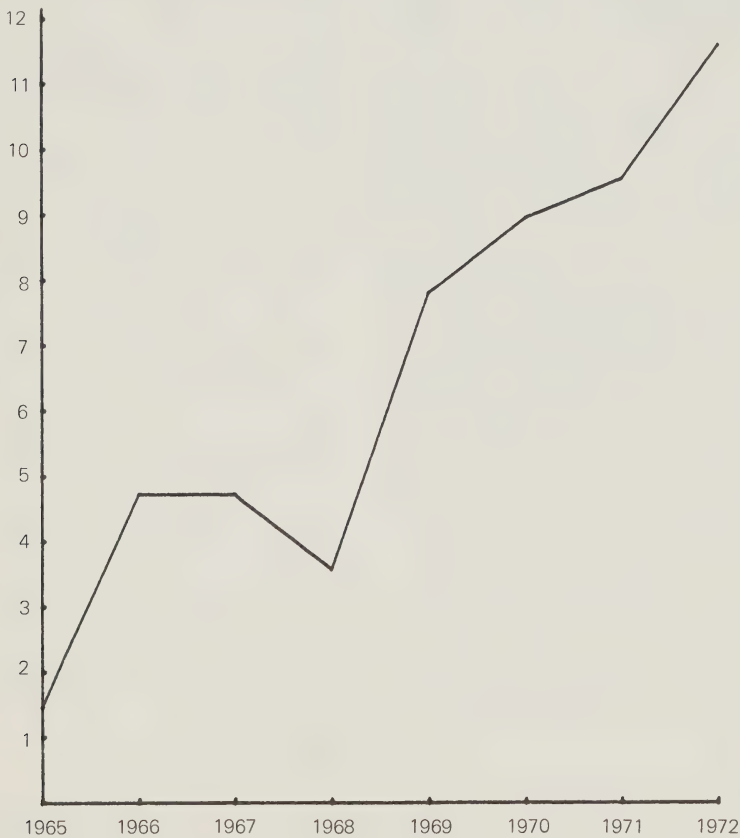


TABLE 4. IN-SEASON GROWTH (DRY MATTER) OF NATIVE GRASS AT SWIFT CURRENT (1959-62)

Period	Growth Per Period	Cumulative Growth
— lb. of dry matter per acre —		
To May 15	17	17
May 16 to May 31	51	68
June 1 to June 15	67	135
June 16 to June 30	80	215
July 1 to July 15	51	266
July 16 to July 31	41	307
August 1 to August 15	40	347
August 16 to August 31	28	375
September 1 to September 15	18	393
September 16 to September 30	11	404
October 1 to October 15	—	404

affecting the cost of winter feed is the price of wheat, since wheat is the best alternative crop on land used for oat-hay production or grass-alfalfa production. Budget data indicate that an increase of 10 cents in the price of wheat will decrease the return to summer pasture by 30 cents per cow-calf unit month. Another important factor determining the return to native range pasture is the price of cattle and feeder calves in particular. Budget data indicate that a rise of one cent per pound in the price of feeder calves will increase the return to summer pasture by 84 cents per cow-calf unit month. The estimated return to summer pasture for 1971 (Table 1) of \$48.20 per cow-calf unit or \$9.64 per cow-calf unit month is based on a farm wheat price of \$1.35 per bushel and cattle prices of \$43.29 per hundredweight for good stocker steer calves and \$34.91 per hundredweight for good stocker heifer calves. The effect on the return to summer pasture for different levels of wheat prices and cattle prices is shown in Table 5.

Alternative Cost of Spring Feeding or Grazing

An expanded cattle enterprise utilizing the increased pasture production accruing from delayed grazing of native range pasture would require adjustments in the farm organization.

Feed, in the form of harvested forage, or pasture must be provided for the expanded cattle enterprise during the non-pasture season. Moreover, additional inputs of labor, buildings and equipment are required. These inputs may be supplied from idle sources such as fall grazing on wasteland or stubble, under-utilized resources such as winter labor, or from new resources such as new or expanded corrals and more grainland converted to fodder production. In this evaluation, the only input not priced at its current annual average level is the cost of

TABLE 5. RETURN PER COW-CALF UNIT TO SUMMER PASTURE (FIVE MONTHS) FOR DIFFERENT LEVELS OF CATTLE PRICES FROM THE 1971 PRICE BASE AND DIFFERENT LEVELS OF WHEAT PRICES

Cattle Price Difference from 1971 Prices	Farm Wheat Prices — dollars per bushel —			
	1.35	1.50	1.64	1.80
— \$ per cwt. —		— dollars per cow-calf unit month —		
-6.00	4.60	4.15	3.70	3.25
-3.00	7.12	6.67	6.22	5.77
0	9.64	9.19	8.74	8.29
3.00	12.16	11.71	11.26	10.81
6.00	14.68	14.23	13.78	13.33

alternative sources of feed during the spring grazing period. This includes the input required for the increased number of cattle:

Alternative sources of feed are as follows:

1. Seeded pasture on cultivated land.
2. Seeded pasture on native range.
3. Seeded fall rye as spring pasture.
4. Confined feeding as an extension of the winter feeding period.

In practice, there could be a combination of some or all of the above feed sources.

Cost per acre estimates for the first three mentioned feed sources are summarized in Table 6. The land investment cost for pasture established on arable land varies with the price of grain; i.e., eight cents per acre for each one cent change in the price of wheat, if wheat is the best alternative land use. The land investment cost for pasture established by breaking and seeding native range pasture to crested wheatgrass and alfalfa varies

TABLE 6. COST PER ACRE PER YEAR OF ESTABLISHING A SPRING PASTURE

	Fall Rye	Improved Pasture Cultivated Land	Range
— cost in dollars per acre per year —			
Development ^a	5.82	2.33	2.73
Tax	.70	.73	.43
Land Investment	2.53	2.62	2.58
Total	9.05	5.68	5.74

^aIncluding cultivation, seeding, fence and water development.

with the price of grain and with the price of cattle. It will decrease $1\frac{1}{4}$ cents per acre for each one cent increase in the price of wheat and will increase 35 cents per acre for each one cent per pound increase in the price of cattle.

Recommended pasture mixtures for southwestern Saskatchewan are crested wheatgrass-alfalfa (Rambler, Roamer) or Russian wild ryegrass-alfalfa. These should be seeded at a 5:1 grass-alfalfa ratio in rows with spaces of 18, 21 or 24 inches. Grazing should not begin before the growth of new grass has reached a height of four to five inches. This will not normally occur before the second week in May. The rate of stocking will depend upon the growth obtained, the soil mixture available and the amount of alfalfa in the stand. In years of average precipitation there should be a uniform stubble height of two to three inches remaining at the end of the grazing season. Crested wheatgrass-alfalfa pastures are best used exclusively as spring pasture. Russian wild ryegrass-alfalfa pastures provide good forage at all times or seasons from spring until early winter. If a particular pasture is to be used in the summer, fall or early winter, the spring stocking rate must be adjusted downward. In an ideal situation, separate pastures would be provided for each season of use. A simple rotation schedule could then be followed.

Data are available on the carrying capacity of crested wheatgrass-alfalfa pasture for the relatively short spring grazing period. Crested wheatgrass-alfalfa fields at the Swift Current Research Station, when clipped to simulate grazing, produced 1,458 pounds of dry matter over the five-year period from 1950 to 1954. These stands of grass had a spacing of six inches. Current data show that wider spacing considerably improves yields. When spring grazed, the estimated T.D.N. yield of crested wheatgrass-alfalfa pastures is 612 pounds where grown under average weather conditions and in rows 12 inches apart.

The United States National Research Council standards suggest that a lactating beef cow on pasture for three to four months after parturition requires 13.2 pounds of T.D.N. daily⁷ or 396 pounds per month. On this basis, the spring grazing capacity of crested wheatgrass-alfalfa pasture is 1.5 cows with calf for a month per acre. This would mean a spring grazing cost of \$3.79 per cow-calf unit month from pasture established on arable land and \$3.83 from pasture established by breaking and seeding native range pasture to crested wheatgrass and alfalfa.

The CDA Research Station at Swift Current obtained yield data on fall rye used as spring pasture for the

five-year period from 1966 to 1970. These yields were based on a two year rotation of oats seeded on summerfallow in the spring and harvested as oat hay, summerfallowed until fall and then seeded to fall rye, grazed the following spring and summerfallowed for the remainder of the year.

Fall rye can be fitted into a grain rotation as above or seeded continuously. With continual seeding, there may be a slight reduction in yield, but this could possibly be offset by a longer period of summerfallow.

The average T.D.N. available for spring grazing per year is 1,076 pounds. Energy requirements for a cow-calf unit month as previously defined are 396 pounds of T.D.N. An acre of fall rye can be expected to provide spring grazing for 2.7 cow-calf unit months. The cost per cow-calf unit month is estimated at \$3.35.

The cost of 396 pounds of T.D.N. from good quality hay at \$21.27 per ton⁸ is \$8.40. This cost could be somewhat less as a housed cow uses less energy than a range cow.

Benefit-Cost Ratios

The non-cost items that determine the level of benefits from delayed grazing are as follows: (a) the percentage of increase in productivity of the pasture from delayed grazing and (b) the length of the delayed grazing period as a percentage of the normal grazing period for native range. With delayed grazing until June 5 the increased productivity is 23 percent and the shortened grazing period as a percentage of the normal grazing period is 87 percent. The benefit from delayed grazing is the increased carrying capacity of the pasture. With delayed grazing until June 5 the carrying capacity will be 123 percent of the carrying capacity for the normal grazing period. However, since this carrying capacity is utilized over a shorter grazing period (87 percent of the normal grazing period), it will provide grazing for a 41.4 percent larger cattle enterprise. The benefit is a cattle enterprise .414 times the cattle enterprise grazed for the normal grazing period.

The cost consists of providing feed for the delayed grazing period for the enlarged cattle enterprise. The delayed grazing period is 13 percent of the normal grazing period and the enlarged cattle enterprise is 141.4 percent of the cattle enterprise grazed for the normal grazing period. Thus, spring pasture or harvested feed

⁷National Research Council, National Academy of Sciences, Washington, D.C., Publication 504.

⁸Wiens, J.K., Kilcher, M.R., "Winter Feed Production on Grain Cattle Farms in Saskatchewan", Canadian Farm Economics, Volume 5, Number 6, February 1971.

TABLE 7. RETURN TO SUMMER PASTURE AND COST OF ALTERNATIVE EARLY SPRING PASTURE FOR THREE LEVELS OF CATTLE PRICES AND TWO LEVELS OF GRAIN PRICES

Cattle Price Difference from 1971 Prices ¹ — cents per pound —	Farm Wheat Prices — dollars per bushel —	Return to Summer Pasture (5 months) — per cow-calf unit month ¹ —	Cost of Alternative Early Spring Pasture Developed From	
			Crop Land	Native Pasture
			— per cow-calf unit month —	
-6	1.35	4.60	3.79	2.43
-6	1.80	3.25	6.19	2.05
0	1.35	9.64	3.79	3.83
0	1.80	8.29	6.19	3.45
6	1.35	14.68	3.79	5.23
6	1.80	13.33	6.19	4.85

¹ Costs other than winter feed and summer pasture per cow-calf unit are held constant at the 1971 price level.

has to be provided for .184 cow-calf unit months times the carrying capacity for the normal grazing periods.

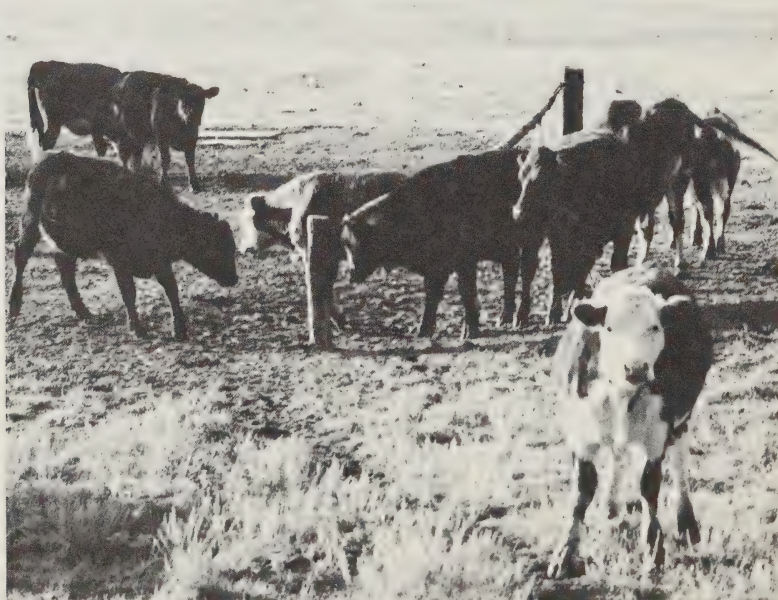
The benefit-cost ratio then is as follows:

.414 times the value of summer pasture per cow-calf unit month (benefit) to .184 times the cost of spring feed per cow-calf unit month (cost).

This indicates that if alternative feeding or grazing is available from the middle of May to the first part of June at a cost which is less than 2.25 times the native

range pasture grazing value (or cost), a delayed grazing practice should be considered.

The grazing cost on owned native pasture is estimated to be \$6.45 per cow-calf month. The return to summer grazing is estimated at \$9.64 per cow-calf unit month (Table 5). Whether one considers summer grazing on native range as a cost or as a return to a fixed resource, delayed grazing of native rangeland is profitable under the postulated assumptions. This necessitates the provision of alternative sources of spring pasture or feed for both the present and the expanded cattle enterprises



at prices less than 2.25 times the above estimated costs or returns. This is the case for the hypothetical range of cattle and wheat prices shown in Table 7 where spring pasture is grass seeded on either native range or crop land.

In order to delay grazing on native range until the first part of June, an alternative source of spring grazing is needed. At the present time, the quickest and cheapest way to provide this grazing while expanding the cattle herd is to seed some of the cultivated land to fall rye and graze it in the spring. This pasture can then be used during the time that it takes to establish the crested wheatgrass-alfalfa pasture on former range land or on land presently being cultivated.

CONCLUSIONS

Management of land resources depends upon the price level of inputs and the price level of the product. The main product of native range pasture in the Brown and Dark Brown soil zone of the Prairies is grazing for the cattle enterprise. There has been an upward trend of feeder cattle prices over the last 20 years. Another determinant of the return to native range pasture is the price of winter feed for the cattle enterprise. The relative increase in winter feed prices has been less than the increase in feeder cattle prices. The productivity of native range pasture normally grazed until mid-October can be increased by 23 percent when the grazing is started about June 5 instead of the middle of May. In

order to delay grazing an alternate source of feed is needed for this period. The benefit-cost ratio will be greater than one, if the cost of feeding per cow-calf unit month for the delayed grazing period is less than 2.25 times the return to summer pasture per cow-calf unit month.

Based on recent price levels of feeder cattle and winter feed, delayed grazing meets or exceeds this criteria.

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POLICY AND PROGRAM DEVELOPMENTS IN CANADA

AGRICULTURAL PRODUCTS MARKETING ACT (Ontario Bean Order)

"The Ontario Bean Producers' Marketing Board and the Farm Products Marketing Board of Ontario are each authorized to regulate the marketing of beans in interprovincial and export trade and for such purposes may, with respect to persons and property situated within the Province of Ontario, exercise all or any powers like the powers exercisable by each of them respectively in relation to the Act and the Plan." (10 April 1973)

AGRICULTURAL PRODUCTS MARKETING ACT (Manitoba Turkey Order)

"The Manitoba Turkey Producers' Marketing Board is authorized to regulate the marketing of turkeys in interprovincial and export trade and for such purposes may, with respect to persons and property situated within the Province of Manitoba, exercise all or any powers like the powers exercisable by it in relation to the marketing of turkeys locally within that Province under the Act and the Plan."

CORRECTION:

Canadian Farm Economics, Vol. 8 No. 2, page 32, column 1 — "Natural Products Marketing Act" should read "Agricultural Products Marketing Act".

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I have read the following article(s):

- (1) Buckwheat: A Canadian Special Crop
- (2) Farm Feedlot Costs and Returns
- (3) Some Economic Aspect of Delayed Grazing on Native Range Pastures

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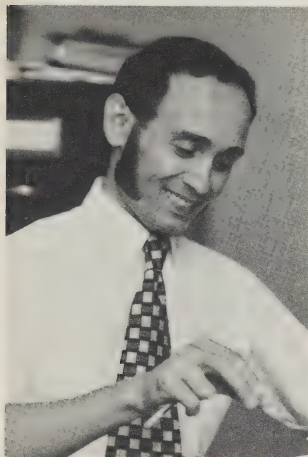
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THE SMALL FARM DEVELOPMENT PROGRAM



The Small Farm Development Program is a new positive approach to rural development. It includes special credit assistance, assistance grants, a listing service, and rural development and farm management services to assist participants in the program reach their social and economic goals.



**Prepared by*

A. Mouelhi and W.T. Burns

INTRODUCTION

Activities in agricultural adjustment can be traced back to the early sixties when federal government institutions became more and more concerned about the problems of inadequate income faced by the small farmer. Subsidies were gaining greater popularity among the various policies and programs that were implemented. Although these earlier policies and programs, or variations of them, are still in effect with relatively high levels of success, it was the decision of the Cabinet of the Canadian Government that rather than increase funds to further subsidize agriculture more effort should be directed to a comprehensive program of assistance to low income farmers. The Minister of Agriculture was asked to develop a program along these lines. The Economics Branch undertook this task. After testing a series of proposals, the Small Farm Development Program (SFDP) was developed.

To assure coordination with other programs, the Cabinet established an Interdepartmental Committee¹ with the following terms of reference:

^{*}This article is based on material developed by staff of the Farm and Rural Development Division, under the direction of Dr. D.H. Plaunt, and by the Farm Credit Corporation. Mongi Mouelhi is a rural sociologist with the Division and Walter Burns is the Associate Director of the Farm and Rural Development Division. The comments received from A.R. Jones and C.T. Craddock as a result of the review of this article are sincerely appreciated.

¹The committee involved the following government bodies: Treasury Board; Finance; Health and Welfare; Regional Economic Expansion; Manpower and Immigration; Farm Credit Corporation; Industry, Trade and Commerce; Privy Council and Agriculture.

"The Cabinet noted the Prime Minister's view that the proposed interdepartmental committee to consider proposals for an early retirement plan for farmers should not limit itself to the Department of Agriculture's proposal, but should consider all relevant proposals."²

The Committee also took into consideration the guidelines adopted by the Cabinet for Agriculture:

"Canada's objective in agriculture is a stable agricultural industry which is economically viable and self sustaining based on international prices and free trade. However, there is a need for transitional assistance designed to help those affected to adapt to the changes involved while insuring that the objective is achieved within the present generation."³

The Committee began examination of relevant proposals in November 1969 with special emphasis on the problems of agricultural adjustment. Their report was submitted on March 3, 1970.

This report of the Interdepartmental Committee provided the background information for the more recent series of action program proposals developed by the Economics Branch. These proposals ranged from emphasis on retiring farmers, farmers leaving agriculture for alternative occupations, resource mobility and

²Cabinet Interdepartmental Committee on Farm Early Retirement and other Related Policy Proposals, "Report to the Minister of Agriculture on Farm Early Retirement", Ottawa, March 3, 1970, p. 2.

³Ibid.

resource adjustment to a final decision that a program featuring direct assistance to operators of low-income farms with growth potential would be of greatest service to them.

The Small Farm Development Program which was announced on December 6, 1971, is a program to facilitate structural and social adjustments in the low income small farm sector of Canadian agriculture. The sum of \$150 million has been made available for the first seven years of operation. The basic program has two thrusts. The first is to assist those farm families with growth potential to enlarge their land holdings and improve their operations and incomes. Secondly, the program will assist others wishing to leave agriculture to liquidate their assets and undertake non-farm employment or retire. To achieve these objectives the program is divided into two parts: the Land Transfer Program (LTP) and the Services Program. LTP provides financial support through credit and grants to stimulate the transfer of land between the developing farmer and the retiring farmer. The Services Program provides the non-financial assistance necessary to help the low income farmers: first, to make his choice between identified alternatives, and secondly, to improve his knowledge and management capability to succeed in agriculture, or alternately to prepare himself to compete in the non-agricultural economic society.

On the basis of current information it is estimated that there are between 125,000 and 150,000 farm families requiring assistance of the type offered by this program. It is expected that many of these would find better opportunities outside of agriculture. The remainder with adequate assistance might be expected to develop reasonable incomes by expanding in agriculture. However, it must also be recognized that this large group of farm people have up to now fallen outside the scope of existing farm programs, particularly those of credit and extension. They suffer from inadequate education. Most have not developed saleable skills, nor have they generated the capability to develop and manage economic farm units. In a great many cases, the capital required to further develop expand is not available to them. In short, the potential clients of this program need assistance of an extraordinary order, both in finances and in training, to provide them with the opportunity of bringing their income up to an acceptable level by Canadian standards.

LAND TRANSFER PROGRAM

LTP which is administered by the Farm Credit Corporation (FCC) is the means by which participants enter the Small Farm Development Program. At this point the

farmer makes the decision to either expand in agriculture or to enter non-agricultural pursuits. He may be assisted in this decision by either or both of the specialists of the Farm Management Service (FMS) or the Rural Development Service (RDS), through a detailed analysis of his prospects and alternatives.

The Land Transfer Program contains four separate but related provisions to facilitate land transfers: assistance grants to vendors, special credit to purchasers, a farm listing service, and purchase and resale of uneconomic farms. Criteria for the eligibility of vendors and purchasers as well as regulations for the purchase and resale of low-income farms by FCC have been established and were later modified by Federal-Provincial agreements.

Assistance Grants

Eligible owners of small farms, who wish to withdraw their assets from farm real estate in order that they can take advantage of non-farm income, employment or retirement opportunities, are entitled to receive \$1,500 plus 10 percent of the sale price of land and building up to a maximum grant of \$3,500. This grant may be paid out in a lump sum or used together with all or part of the equity in the farm to purchase an annuity to provide for the future income requirements of the vendor.

An eligible vendor may also make arrangements with the purchaser to retain ownership or the right of occupancy of the farm home and a suitable surrounding area of land for himself and his spouse during their lifetime or for a specified period.

Special Credit

If he meets the eligibility criteria, the operator of a small farm who wishes to expand is entitled to special credit assistance under an agreement for sale to buy more land. In such a case, the purchaser is required to pay a \$10 application fee and a down payment of \$200 on any sale of \$20,000 or less. For sales over \$20,000, the down payment will be as prescribed by the Federal Minister of Agriculture. Payment will be spread over a period of up to 26 years at the same rate of interest charged by FCC. The purchaser is not required to mortgage the farm he already owns as security for the balance of the purchase price.

Listing Service

FCC also provides a farm listing service to facilitate communication between prospective vendors and purchasers of small farms. Listings of small farms for sale are available to the public. However, emphasis in the

listing service is on the availability of land for owners of small farms wishing to enlarge their operations.

Purchase of Land by FCC

In some cases, which are specified in the section on Federal-Provincial agreements, FCC is authorized to purchase land from eligible vendors when there is no prospect for immediate resale in view. To facilitate later resale of such farms, FCC will pay up to 90 percent of the appraised value of the farm. However, grants will be based on the full appraised value.

SERVICES PROGRAM

Farm Management Service

Farmers deciding to expand will be provided with intensive assistance by FMS. Initially, Farm Management Specialists will assist with the development of complete detailed management systems for each client. Budgets will be developed and record keeping systems and capital resource requirements will be established and made available to these farmers. This will be followed up with a continuing advisory service and with modified management systems as the farm unit begins to grow and generate its own capital. This ongoing service will be operated under specific guidelines based on the type of agriculture suited to each region of Canada and on available markets.

Rural Development Service

Those deciding to leave farming for non-farm pursuits will be offered further intensive assistance by RDS. This service will assist clients to find adequate jobs in locations suitable to their future living requirements. The need for training and skill development will be identified and clients will be entered in suitable courses, usually through the further assistance of Manpower programs. Housing accommodations in reception areas will be found for migrating clients. Follow-up activities will assure that participants of the program will be assisted to fully adjust and adapt to new environments with a minimum of hardship.

Rural and Agricultural Development Information System

The field staffs of these services will be backed up with a specially designed Rural and Agricultural Development Information System (RADIS). This information system will serve both the developing farmer through FMS and the departing farmer through RDS. RADIS will establish farm operating systems suitable to the various regions of Canada with models of economic farm units being established as guidelines for development. Growth pat-

terns by which small low income units can be developed up to these minimum levels will also be established. Farm enterprise budgets and farm growth models are the prerequisites to the development of the whole farm production unit.

For the benefit of departing farmers, RADIS will provide detailed information on a wide range of topics required by the RDS in the various regions of Canada. This will include employment opportunities, housing availability and costs, living conditions and costs, availability of training, and adjustment problems. The suitability and adequacy of employment opportunities in relation to the living costs and conditions will be assessed. All information will be generated, developed and assembled in a specific format for adaptation by the field staff to serve the individual needs of the participant farmer and his family.

FEDERAL-PROVINCIAL AGREEMENTS

In recognition of the responsibility of Provincial Departments of Agriculture to provide extension services to farmers, the Minister has entered into Federal-Provincial agreements whereby the implementation of SFDP is carried out jointly by the Federal and Provincial Departments. These agreements have been signed with all the Provinces except Quebec and Newfoundland where negotiations are still underway. The dates on which the agreements were signed with the provinces are:

Alberta	July 14, 1972
Ontario	August 24, 1972
New Brunswick	October 20, 1972
British Columbia	November 22, 1972
Prince Edward Island	December 20, 1972
Nova Scotia	January 3, 1973
Saskatchewan	June 29, 1973
Manitoba	July 6, 1973

An attempt was made in the formulation of these agreements to provide for specific regional and provincial aspects of the low-income farm problem, within the broader program. As a result, while the agreements have a common pattern, they also contain provisions which focus on specific requirements of the provinces.

Coordinating Committees

Joint Federal-Provincial Coordinating Committees consisting of equal numbers of federal and provincial staff have been established under these agreements to provide the management control of SFDP. The size of these committees varies from province to province:

British Columbia	4
Alberta	8
Saskatchewan	6
Manitoba	4
Ontario	6
New Brunswick	6
Nova Scotia	6
Prince Edward Island	4

In addition, a National Coordinating Committee is established to fulfill an advisory role to the Minister on future policy and program development. These committees operate at senior levels.

Farm Management and Rural Development Services

Under the agreements some provinces provide these services from their own resources. In others, Canada shares in the provision of these services by seconding staff to operate under the supervision of provincial extension services. Saskatchewan, Ontario and Nova Scotia fall in the first category. Staff are provided by secondment on a one to one basis in other provinces as follows:

British Columbia	6
Alberta	36
Manitoba	10
Prince Edward Island	7
New Brunswick	No. to be determined by the Canada-New Brunswick Coordinating Committee

The agreements also provide that the federal department is responsible for the detailed information system required to back up the field staffs, as well as for the training of such staffs. It has been established that to be effective these activities must be carried out in close coordination with the related provincial personnel at the Director of Extension level.

Eligibility Criteria for Vendors and Purchasers

1. *Vendor*: to be eligible for a vendor grant under the Land Transfer Program, an owner of a small farm must meet the following criteria:

a) on the dates of commencement⁴ of the program, he:

⁴ The dates of commencement of SFDP are April 1st, 1972 on which the implementation program was announced and the dates on which the agreements were signed with the provinces. However, consideration may be given to a farmer who had sold his farm before the signing of the agreement for certain specified reasons.

(i) was the owner, or purchaser under agreement of sale, or was equitably entitled to ownership by inheritance of an uneconomic farm;

(ii) had as his principal occupation the operation of that farm;

b) offers and sells substantially⁵ all of that farm for no more than the following amounts:

British Columbia	\$30,000
Alberta	\$30,000
Saskatchewan	\$30,000
Manitoba	\$30,000
Ontario	\$20,000
New Brunswick	\$25,000
Nova Scotia	\$25,000
Prince Edward Island	\$20,000

c) demonstrates to the satisfaction of FCC that he has an alternative means of livelihood other than potential welfare assistance to maintain himself and his dependants in a manner equal or superior to that being realized from the farm;

d) agrees not to become a self-employed farm operator in the future unless moving from an uneconomic situation to a potentially economic farm business.

2. *Purchaser*: special credit is available to an owner of an uneconomic farm who wishes to buy land from an eligible vendor provided that he meets the following criteria at the time of application:

a) is a Canadian citizen or landed immigrant;

b) is the owner, purchaser under agreement for sale or tenant for a period not less than three years, and operator of a farm;

c) has his principal occupation the operation of that farm;

d) has assets not exceeding \$60,000 as determined by FCC;

e) is prepared to purchase additional land such that the consolidated farm unit will, in the opinion of FCC, have sufficient land, labour and capital under his management to become a viable commercial farm;

f) makes an application for special credit assistance and accepts all terms and conditions of agreement for sale as prescribed by FCC;

⁵ See "Assistance Grants" section.

3. *Loss of Eligibility of Potential Vendors*: an otherwise eligible vendor renders himself ineligible for a grant if:

a) he receives a subsidy in addition to and in relation to the sale price of his farm from another government sponsored program;

b) the farm is sold to a purchaser who intends to continue to operate the farm as a separate, uneconomic farm unit;

c) the farm is sold to a purchaser buying land for non-farm use, if he is buying a number of such farms for a purpose contrary to provincial plans for development of the area;

d) the farm is sold to non-Canadian citizens or non-landed immigrants.

To emphasize the importance of small farmers having equal opportunity to purchase land, Manitoba and Saskatchewan agreements add the following restrictions:

a vendor renders himself ineligible for a grant if, within a specific period, he sells his farm to a farmer with assets over a specific value or to the province for immediate leasing (with continuous option to buy, after a maximum period of 5 years) to a farmer with whom the lease had previously been negotiated and whose assets are over this specific value. These specific criteria are as follows:

	Manitoba	Saskatchewan
Period — over	6 months	3 months
Land and buildings — over	\$70,000	\$60,000
Agricultural assets — over	—	\$100,000

Purchase of Land by FCC and the Provinces

All agreements provide for the purchase of farms which have a reasonable chance of resale for farming purposes by FCC from eligible vendors where there is no other purchaser immediately available. Priority for such purchases are given to vendors who are required to move from the farm for reasons of employment that is readily available, and to vendors who are retiring and immediately require the grant and their equity in the farm because of ill health or inadequate income. Agreements with some of the provinces provide that they would be given first refusal opportunity on the purchase of such lands. These are British Columbia, Saskatchewan, Manitoba and Prince Edward Island.

In the case of lands of low agricultural capability, the agreements include specific provisions to meet local conditions. Manitoba and Ontario agreements provide that FCC refers lands to be taken out of agriculture to the province for direct purchase. In Alberta, such lands

can be purchased by Canada provided that the province agrees to buy them from Canada under special agreement. Lands to be used for extensive agriculture in Manitoba and lands to be taken out of agriculture in New Brunswick, Nova Scotia and Prince Edward Island are purchased by the province from FCC under special conditions:

1. that the funds used to purchase such lands do not exceed the following proportions of total funds spent to purchase land from vendors during the next five years and, of funds spent in any one year:

	Total Funds For 5 Years	Funds for Any One Year
Manitoba	15%	30%
New Brunswick	20%	35%
Nova Scotia	20%	35%
Prince Edward Island	20%	35%

2. that these lands are sold to the province at 25 percent of the purchase price with the provision that if resold within the following number of years, 75 percent of the resale price reverts to Canada:

	No. of Years
Manitoba	20
New Brunswick	20
Nova Scotia	20
Prince Edward Island	15

3. that in any one year, the Federal Minister of Agriculture may limit the funds for the purchase of lands to be used for extensive agriculture or to be taken out of agriculture.

Other Provisions

The Canada-Manitoba Coordinating Committee will appoint and set the terms of reference for five Regional Sub-Committees to act as liaison between sub-regional operations and the Coordinating Committee.

Alberta will establish, in consultation with Canada, Agricultural Development Committees for the purpose of exchanging information and advising the administering agencies and the Canada-Alberta Coordinating Committee of local needs and opportunities relevant to the program.

Alberta will also assume full administrative and financial responsibility for seconded staff at the end of the agreement.

SFDP ACTIVITIES

Presently, SFDP is operating in all the provinces which have signed agreements with Canada. Good progress has

been made by the Federal-Provincial Coordinating Committees in specifying the details of the administration and operation of the program. Progress has also been made in the hiring of field staff to provide the Rural Development and Farm Management services. The Land Transfer Program has been operating since September 21, 1972. The initial response has been excellent. A large number of low income farmers expressed their desire to enlarge their farms through special credit. A relatively larger number of owners of uneconomic small farms expressed their wish to sell their farms under the program and take advantage of the vendor grant.

Inspection of available information on transactions which took place before April 1st, 1973 revealed some interesting facts. Over one half of the vendors were past retirement age and therefore were receiving benefits from the Canada Pension Plan. The average age of all vendors was 57 years. However, 21.7% of the vendors took full-time employment and 13.8% worked part-time, giving a total of 35.5% who chose paying jobs over operating uneconomic farms. Right of home use and title to home site were retained by 24% of the vendors who took advantage of this special feature of the

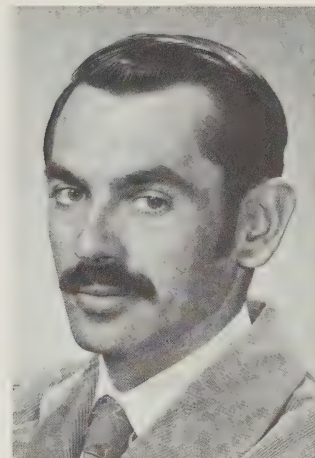
program. The farms sold under the program averaged 195 acres in size with 106 cultivated acres.

Since purchasers are encouraged to obtain normal loans in cases where it is preferable to consolidate the overall financial position and to provide additional capital for the development of enlarging farms, only 23.6% of the purchase transactions were financed through special credit assistance. The remainder were financed through the Farm Credit Act or other loans, or were purchased by the provinces for later resale to farmers. Purchasers under the program were relatively young. Their average age was 39 and ranged from 20 to 58 years of age. The average value of their owned farm real estate was \$30,433. After the purchase, the average value of their consolidated property went up to \$43,859. The average number of cultivated acres increased from 142 to 223.

The Small Farm Development Program is already showing positive results. However, there is some evidence that it is not dealing adequately with certain problems of the low income farm sector. As experience is gained, it is anticipated that program modifications will be required to overcome more of the significant problems of Canadian Agriculture.

THE TENDER FRUIT INDUSTRY IN CANADA

Canada's peach canning sector has experienced a decline in the volume of domestic peaches available for packing and the number of firms packing peaches. This trend has been associated with an increase in demand for fresh peaches, rising costs and import competition.



R.W. Anderson *

INTRODUCTION

Canada's peach industry is part of a larger general industry categorized as the "tender fruit industry". Included in the category, tender fruit, are peaches, pears, apricots, sweet cherries and prune/plums. All have several characteristics in common. Each fruit is retailed in the fresh form and in the processed form where it is usually canned in sugar syrup. Each fruit has a very short storage period in the fresh state, with the exception of pears, and consequently, the fresh market period for each fruit is quite short in length.

Ontario and British Columbia are the major producing provinces. Within the two provinces, the principal areas of concentration of production are the Niagara region of Ontario and the Okanagan Valley of British Columbia.

Total cash receipts from tender fruit have increased marginally even though there has been a general decline in production. The increase in cash receipts has largely been the result of an increase in fresh market prices. In

response, a larger percentage of the crop is sold on the fresh market and a declining percentage is directed to the processing market. This trend is one factor which has brought about a general change in industry structure.

Peaches account for nearly half of the receipts from all tender fruit crops. In terms of absolute dollars, receipts from peaches reached a high of \$9.8 million in 1970. This is almost double the receipts for pears. As a percentage of total tender fruit receipts, peaches have declined from an average of 57.4 percent in the 1951-55 period to 46.5 percent in the 1966-71 period.

Emergence of the fresh sector as the dominant market for the tender fruit industry is most evident in peaches. Prior to the late 1960's, processors purchased over 50 percent of the total peach production for canning or other processing. As production declined in the late 1960's, processors purchases accounted for less than 40 percent of the crop, reaching a low of 25 percent in 1970. This article examines the change in the peach industry, the factors contributing to the change and the future of the industry if present conditions prevail.

PEACH PRODUCTION IN CANADA

Canadian peach production exceeded 112 million pounds annually during the period 1952-64 with the

*Dr. R.W. Anderson is an agricultural research economist with the Economics Branch. This article results from a study entitled "The Tender Fruit Industry in Canada", released by the Canada Department of Agriculture. Readers wishing additional information on the topics discussed may obtain a copy of the study by writing the Economics Branch, Agriculture Canada, Ottawa, K1A 0C5.

TABLE 1. CANADIAN PEACH PRODUCTION IMPORTS, PACK, STOCKS, PRICES, FARM VALUE, SALE FOR PROCESSING AND SUPPLY OF CANNED FRUIT, 1946-71¹

Year	Production 000's of lbs.	Fresh Imports 000's of lbs.	Canned Exports 000's of lbs.	Canned Imports 000's of lbs.	Domestic Pack 000's of lbs.	Canned Stocks ² 000's of lbs.	Average Price \$/Ton	Farm Value 000's of \$
1946	107,250	22,090	1,228	a	37,200	2,906	92	5,365
1947	84,050	29,536	1,036	a	34,587	3,426	84	4,508
1948	88,000	n.a.	234	a	37,664	7,464	99	4,953
1949	100,550	n.a.	56	a	46,875	8,615	87	4,987
1950	61,100	17,457	41	a	39,143	13,424	90	2,754
1951	89,600	17,469	41	a	51,253	13,671	89	4,004
1952	145,850	16,915	80	a	39,493	25,356	71	5,152
1953	144,650	18,567	49	a	39,199	20,994	77	5,543
1954	121,250	24,902	973	12,140	52,340	9,603	86	5,208
1955	144,150	12,794	2,922	10,918	66,455	13,064	85	6,125
1956	83,350	39,950	2,724	14,627	39,133	20,514	105	4,384
1957	140,050	21,196	299	22,687	63,455	13,940	89	6,218
1958	152,150	26,667	3,338	21,853	56,036	20,401	76	5,761
1959	132,250	32,062	1,841	19,386	44,536	12,766 ^b	82	5,444
1960	118,100	47,257	554	32,159	50,614	8,802 ^b	104	6,137
1961	153,750	36,550	450	29,529	60,469	13,494 ^b	87	6,674
1962	112,800	31,600	1,695	28,804	40,345	18,947 ^b	103	5,784
1963	118,650	36,150	245	36,008	42,721	9,875 ^b	117	6,933
1964	143,100	18,500	174	40,359	45,452	8,724 ^b	114	8,128
1965	80,300	46,450	171	53,709	28,482	10,134 ^b	138	5,531
1966	104,250	34,000	40	58,716	29,475	5,288 ^b	142	7,434
1967	82,300	23,932	143	65,991	15,708	8,443 ^b	176	7,207
1968	95,800	40,564	57	67,560	22,187	2,220 ^b	188	8,963
1969	83,000	50,036	Nil	74,156	20,831	6,197 ^b	216	8,935
1970	109,830	33,486	Nil	50,866	16,706	7,830 ^b	180	9,863
1971	125,850	34,760	Nil	59,978	21,416	5,771 ^b	178	11,166

¹ All weights are net weights.

² Domestic stocks only as of June 30 of the year.

³ Supply of Canned fruit = Stocks plus pack.

^a These figures exclude stocks held by retail and warehouses.

^b Combined with Canned Apricots Imports and not separable.

n.a. — not available.

SOURCE: Statistics Canada

exception of 1956 (Table 1). From 1965 to 1969, Canadian production was generally below 105 million pounds. In 1970, peach production totalled nearly 110 million pounds and rose to 128 million pounds in 1971. Unfavourable climatic conditions in Southwestern Ontario greatly reduced the 1972 crop, which is now estimated to have been about 105 million pounds. Ontario has accounted for approximately 81 percent of the annual Canadian peach production since 1950 with British Columbia producing the remaining portion.

Freestone peaches have been, and will likely continue to be, the major type of peach grown in Canada. Freestone peaches differ considerably from Clingstone peaches. Freestone peaches are soft, juicy, and particularly good for the fresh market, while Clingstone peaches are firm and retain their shape especially well in processing. With less than five percent of Canada's peach production consisting of Clingstone varieties, Freestone peaches are utilized for both the fresh market and for processing.

PEACH PRODUCTION IN ONTARIO

In 1960, 24 percent of Ontario's total orchard acreage consisted of peaches. Of this, over 99 percent was centered in two areas, the Niagara Fruit Belt and Southwestern Ontario. These two areas have adequate soil conditions, winters that do not usually inflict low temperature injury, and relatively frost-free seasons. Peaches account for 42 and 57 percent respectively, of orchard plantings in these two areas.¹ In terms of total production, Ontario averaged about 85 million pounds annually for the decade 1962-71, down about 25 million pounds from the previous 10 year average (Table 2). Measured in acres, production declined from a high of 16,455 acres in 1956 to 10,169 acres in 1971 (Table 3).

¹ Krueger, R.R., "The Geography of the Orchard Industry In Canada" opposite pg. 29

TABLE 2. REGIONAL PEACH, PRODUCTION, VALUE AND PRICES

Year	British Columbia Peaches			Ontario Peaches		
	Production	T.F.V. ¹	Price Paid to Producer ²	Production	T.F.V. ¹	Price Paid to Producer ²
	'000 lb	'000\$	\$/ton	'000 lb	'000\$	\$/ton
1946	33,450	1,854	110.80	73,800	3,502	94.80
1947	37,900	1,842	97.20	46,150	2,286	99.20
1948	36,500	1,655	90.80	51,500	2,716	105.60
1949	38,650	1,663	86.00	61,900	2,702	87.20
1950	4,150	260	125.20	56,950	2,494	87.60
1951	22,200	1,135	102.40	67,400	2,869	85.20
1952	27,200	768	56.40	118,650	4,384	74.00
1953	27,150	978	72.00	117,500	4,565	77.60
1954	13,550	554	81.60	107,700	4,654	86.40
1955	25,650	890	69.20	118,500	5,235	88.40
1956	15,000	658	87.60	68,350	3,726	108.80
1957	26,750	929	69.60	113,300	5,289	93.20
1958	22,750	875	76.80	129,400	4,886	75.60
1959	25,100	989	78.80	107,150	4,455	83.20
1960	29,450	1,143	77.60	88,650	4,994	112.80
1961	26,550	1,109	83.60	127,200	5,565	87.60
1962	31,150	1,214	78.00	81,650	4,570	112.00
1963	21,600	1,089	100.80	97,050	5,844	120.40
1964	35,850	1,385	77.20	107,250	6,743	125.60
1965	NIL	NIL	NIL	80,300	5,531	137.60
1966	18,050	1,255	139.20	86,200	6,179	143.20
1967	22,100	1,490	134.80	60,150	5,717	190.00
1968	17,900	1,638	184.00	77,900 ^a	7,325	188.00
1969	NIL	NIL	NIL	83,000 ^a	8,935	216.00
1970	20,100	1,895	188.00	89,750 ^a	7,968	178.00
1971	25,800	2,226	182.00	101,300	8,940	176.00
1972	26,700 ^p			78,600 ^p		

¹ T.F.V. = Total Farm Value² Weighted average of fresh and processing sales^p - Preliminary^a Marketed production only

SOURCE: Crop and Seasonal Price Summaries, C.D.A.

Although the productive life of a peach tree is about 18 to 20 years, the varieties planted are constantly changing to meet grower and consumer demands for better quality, higher yields, and a longer harvest season. In the early 50's, growers planted dual purpose varieties such as Golden Jubilee and Veteran. By the early 60's, growers had shifted to other varieties, such as Earlired, Loring, Royalvee and Garnet Beauty, better suited to the fresh market. In the late sixties, a significant acreage of Clingstone peaches was planted. The predominant Clingstone varieties were Babygold Five and Seven.

The extent of new plantings indicate that production in Southwestern Ontario is expanding, while it is declining in the Niagara region. Peach trees require at least four years of growth before they are considered of bearing age. With approximately 35.8 percent of their trees non-bearing (under four years of age), Southwestern Ontario is currently in a stage of expansion. In compa-

rison, only 28.5 percent of the trees in the Niagara area are non-bearing. In view of this planting trend, Southwestern Ontario has perhaps the greatest production potential and will undoubtedly become more influential in the future.

PEACH PRODUCTION IN BRITISH COLUMBIA

A much smaller percentage (9 percent or 2,711 acres in 1968)² of British Columbia's total orchard acreage consists of peaches. Of this acreage, approximately 98 percent is located in the Okanagan Valley, running from the Canada/U.S.A. border in the South to Salmon Arm in the North. The Summerland area is considered to be the major area and, although encountering complete

² B.C. Tree Fruits Limited, Kelowna, B.C. Forecast September, 1968.



crop losses in 1965 and 1969, the most stable production area in the province.

During the late 40's production averaged over 35 million pounds annually, fluctuated considerably in the 50's and early 60's and since 1965 has averaged from "nil" to 25

TABLE 3. PEACH ACREAGE AND PRODUCTION TRENDS IN ONTARIO, 1950-1971

Year	Total Acreage	Yield tons/acre	Returns/Acre
1950	15,570	1.8	160
1951	16,265	2.1	177
1952	16,052	3.7	273
1953	15,852	3.7	288
1954	15,896	3.4	294
1955	16,165	3.7	324
1956	16,455	2.1	226
1957	14,540	3.9	364
1958	14,520	4.5	336
1959	13,855	3.9	329
1960	13,865	3.2	360
1961	13,810	4.6	402
1962	12,033	3.4	380
1963	11,104	4.4	493
1964	11,079	4.9	609
1965	11,069	3.6	500
1966	11,069	3.9	558
1967	10,133	3.0	565
1968	10,148	3.9	722
1969	10,182	4.2	878
1970	10,169	4.4	784
1971	10,169	5.2	879

SOURCE: Ontario Ministry of Agriculture and Food.

million pounds (Table 2). New plantings now in the ground indicate that production could increase to earlier levels, in the 30 million pound range. Estimates indicate that the total bearing acreage will increase from 1,656 acres in 1970 to 2,048 acres in 1975. As in Ontario, Freestone peaches dominate. Only 142 acres of Clingstone peaches were reported in 1968.³ Fresh market varieties include Redhaven, Dixie Red and Sunhaven while Golden Jubilee, Valiant and Veteran, along with the Clings, are used for canning.

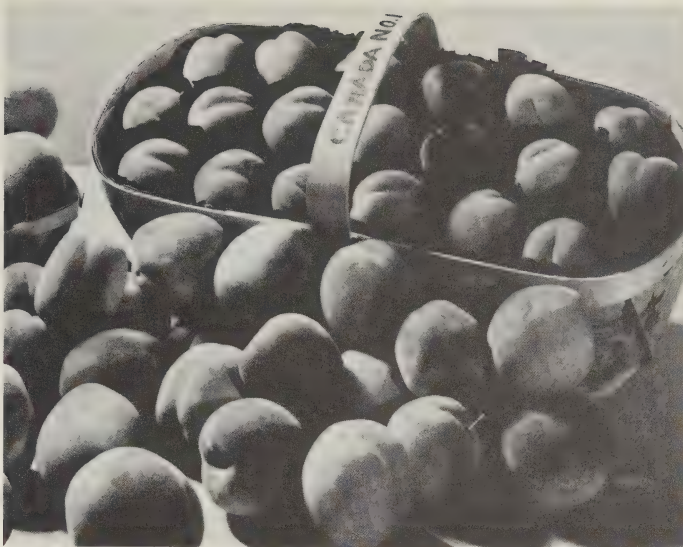
COST OF PRODUCTION

Grower returns depend upon a number of factors including their individual costs and production levels.

Prices received by growers are dependent upon overall production within the country and on U.S. production. Although data on average prices received by growers and total production values are available, current cost data are difficult to obtain. British Columbia has published average production costs for Freestone peaches for 1971, and Ontario has developed, and is in the process of publishing, cost data.

The Ontario study indicates that the total cost to produce, harvest and prepare the yield from one acre of Freestone peaches for the fresh market, based on an average of five tons per acre, is approximately \$1,166.70 (Table 4). In British Columbia, cost data, based on a yield of eight tons per acre, would indicate a per acre

³op. cit.



cost of \$1,354.81 (Table 5). The cost data from Ontario are estimates arrived at in a joint meeting by nine peach growers from the Niagara Peninsula. This same methodology was used in this study to estimate pro-

duction and marketing costs in Ontario for processing peaches. A cost of \$842.10 was developed. Container costs accounted for much of the difference between the

TABLE 4. COST OF PRODUCING PEACHES IN ONTARIO 1972.¹

Operation	Cost per Acre	Cost per Ton
	— dollars —	
CULTURAL COSTS:		
Replant	\$ 12.75	
Prune	60.75	
Brush removal ^a	11.05	
Cultivation	10.00	
Mulch	33.75	
Fertilizer	17.55	
Weed control	13.50	
Spraying	115.00	
Thinning ^b	60.75	
Deadwood removal ^a	23.95	
Mowing ^c	24.00	
Stump removal ^a	8.25	
Broken limb removal ^a	4.00	
Other maintenance	2.30	
Total	\$397.60	\$79.52
OVERHEAD COSTS:		
Building (interest & depreciation)	22.50	
Land (interest)	160.00	
Taxes	25.00	
Tile drains (depreciation)	22.50	
Total	\$230.00	\$46.00

TABLE 4. (continued)

Operation	Fresh Market	Process Market	Fresh Market	Process Market
	\$'s per acre	\$'s per acre	\$'s per ton	\$'s per ton
Harvest Costs: (5 tons per acre)				
Picking	202.50	157.50	40.50	31.50
Distribution and hauling	21.00	21.00	4.20	4.20
Grading and Packing	57.60	36.00	11.52	7.20
Containers ^d	258.00	—	51.60	—
Total	539.10	214.50	107.82	42.90
TOTAL COST	\$1,166.70	\$842.10	\$233.34	\$168.42

¹ Costs were obtained from a group of nine Niagara peach growers at a joint meeting. In general, the growers were above average in both management and location. The costs presented in this Table are average expected costs for above average growers.

^a These four cost may have been included in the pruning costs for British Columbia.

^b Not all growers may thin nor may they thin every year.

^c This cost appears high and may be adjusted prior to publication.

^d Includes: 384 masters @ 28¢ each; 1,536 4-qt. baskets @ 9¢ each plus a small cost for pack material.

SOURCE: Ontario Ministry of Agriculture and Food - Mr. Robert Wilcox, Extension, Vineland; Mr. Errol McKibbin, Farm Economics, Vineland.

TABLE 5. COST OF PRODUCING REDHAVEN PEACHES IN BRITISH COLUMBIA. (8 Ton Yield).

Operation	Cost Per Acre	Cost Per Ton
	— dollars —	
CULTURAL COSTS:		
Pruning	121.25	15.16
Thinning	220.00	27.50
Spraying	57.29	7.16
Fertilizer	17.05	2.13
Mowing	15.08	1.88
Irrigating	47.24	5.90
Weed Control	11.24	1.40
Total Cultural Costs	478.65	59.83
HARVEST COSTS:		
Bins — to farms	10.00	1.25
Bins — in and out of orchards	16.75	2.09
Bins — to packing house	18.00	2.25
Picking	133.76	16.72
Total Harvest Costs	178.51	22.31
CASH OVERHEAD:		
Misc. office (5% of cash costs)	32.86	4.11
Taxes — Water \$30, Land \$22	52.00	6.50
Total Cash Overhead	84.86	10.61
MANAGEMENT: (5% of Estimated Gross Income)	80.00	10.00
INVESTMENT:		
Land	204.75	25.59
Crop	151.20	18.90
Buildings	26.28	3.28
Equipment	180.56	22.57
Total Investment	562.79	70.35
TOTAL COST PER ACRE	1,354.81	169.35

SOURCE: British Columbia Department of Agriculture, Feb. 23, 1972.

cost for the fresh market and cost for the processing market.

VALUE OF PRODUCTION

The average return per ton (price) received by Canadian peach growers fluctuated between \$71 and \$105 per ton in the early 1960's (Table 1 and Figure 1). Since 1962, the price has moved upward steadily, reaching a high of \$216 per ton in 1969. The most significant price increases occurred in the fresh market.

In Ontario, growers selling to the processing market have, since 1962, received prices ranging from \$104.00 to \$144.00 per ton (Table 6). This compares with a price range of California Clingstone peaches for the same period of \$57.20 to \$82.20 per ton (Table 7). Ontario

TABLE 6. GROWER PRICE RECEIVED FOR PROCESSING PEACHES IN ONTARIO. 1956-1970.

Dollars Per Ton					
Year	Price	Year	Price	Year	Price
1956	104.10	1962	104.00	1968	136.80
1957	102.30	1963	104.00	1969	135.60
1958	76.70	1964	110.00	1970	134.50
1959	93.00	1965	126.00	1971	140.50
1960	106.10	1966	124.00		
1961	95.10	1967	144.00		

SOURCE: Ontario Ministry of Agriculture and Food — "Agricultural Statistics for Ontario".

growers selling peaches on the fresh market have received prices estimated to range from \$216 to \$277 per ton during the period 1966-70.⁴ Prices to growers in British Columbia have generally averaged lower than to growers in Ontario with differences noted of over \$30 per ton (Table 2). On a percentage basis, processing prices have increased approximately 33 percent while fresh prices have risen by over 100 percent since the early 1960's.

UTILIZATION

Most of Canada's peaches are marketed in either the fresh, canned or "further processed" form such as pies, baby food, preserves and various peach desserts.

Sales of peaches on the fresh market are not well documented and data are difficult to obtain. Sales through roadside markets and pick-your-own operations are frequently not recorded or are not segregated by the commodity sold. The British Columbia Department of Agriculture has determined that over half of the total peach crop in the province is sold through roadside or retail farm markets. Rail-car unload data indicate that Toronto, Montreal, Winnipeg and Vancouver are the major markets for fresh peaches. These major markets generally receive fresh peaches from only one Canadian producing area and from foreign sources. Total consumption of fresh market peaches has increased despite significant increases in prices, from an average of 89 million pounds in the 1951-55 period to 99 million pounds in the 1966-70 period (Table 8). During the same period, total consumption of canned peaches increased from 56 to 76 million pounds. Prices on the

⁴The fresh price per ton was calculated by removing the value of the peaches sold for processing from the total Ontario peach value and dividing by the number of tons sold to the fresh market. Consequently, the prices given are averages representing several outlets including sales through a number of marketing organizations. The values for the years in the 1966-70 period are as follows: 1966 — \$216.40; 1967 — \$273.16; 1968 — \$291.84; 1969 — \$297.71; and 1970 — \$237.97.

PEACH PRICES - CANADA, ONTARIO, BRITISH COLUMBIA, 1946 - 1971

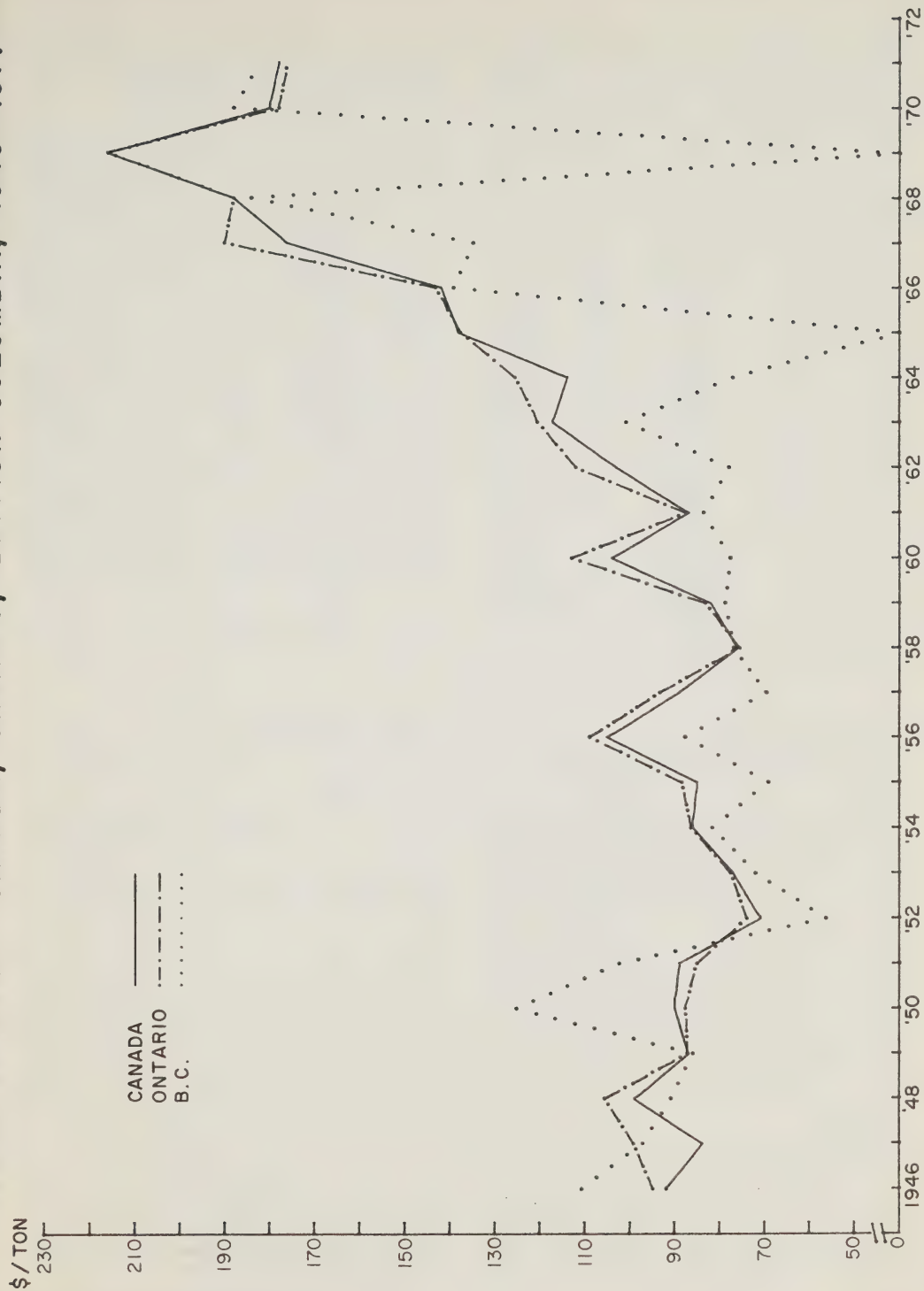


FIGURE 1

TABLE 7. CALIFORNIA PEACH PRICES 1954-67.

Year	Freestone		Clingstone	
	Grower Return	Price ¹	Grower Return	Price ¹
	\$/ton	\$/ton	\$/ton	\$/ton
1954	62.60	—	54.70	—
1955	75.30	—	80.50	—
	70.20	—	70.90	—
	61.50	—	64.10	—
	59.10	—	65.00	—
	50.70	—	58.80	—
	50.90	—	55.90	—
	51.80	—	67.50	—
1962	52.60	—	64.00	—
	55.70	62.00	57.20	71.70
	61.70	68.00	61.50	75.90
	51.70	59.50	68.00	83.70
	74.50	81.60	67.80	84.00
	92.40	99.80	82.20	97.60
	92.70	102.40	75.20	92.40
1968	76.60	84.80	73.40	92.80
1970	79.40	88.60	80.60	98.60
1971	86.20	93.40	78.62 ^a	95.40 ^a

¹ Price: This newer concept, first introduced in 1963, computes price and value for "processing" utilization on basis of equivalent returns at the processing plant door. This change results in a higher price and value series for processing, or dual processing — fresh market crops.

^a Includes \$4.39 which was withheld to compensate growers for about 58,000 tons of unsold and unharvested fruit.

SOURCE: California Fruits And Nut Statistics — California Crop And Livestock Reporting Service.

processed market, as mentioned earlier, increased by a much smaller percentage than did fresh market prices.

Even though the major peach producing areas have both fresh and processing market outlets, they differ in their dependence upon each market. In Ontario, which has a sizeable urban population, roadside markets and pick-your-own operations are open throughout the entire peach season in addition to the conventional retail outlets. In British Columbia, roadside markets are also important, but with its smaller urban population, they are very dependent upon tourist trade and are open therefore, only until Labour Day. After this date, sales are made mostly to processors. Despite the short fresh market season, B.C. producers sold less than 13 percent of their 1971 production to processors.

IMPORTS

Canned imports have increased significantly while fresh imports have increased marginally. Prior to 1960, less than 23 million pounds of canned peaches were imported into Canada (Table 1). Canned imports steadily increased, reaching a high of 74.1 million pounds in 1969 (approximately 80 percent of Canadian

consumption). Fresh imports from 1956 to 1965, averaged approximately 33 million pounds. During the period 1966-70, they averaged 36 million pounds.

Most of the canned imports are Clingstone peaches from the United States. Very few canned Freestone peaches are imported. Consequently, the imported canned Clingstone peaches compete directly with Canada's canned Freestones. In 1960, the U.S. accounted for 99 percent of Canada's total peach imports. The U.S. share of the market has declined, however, and in 1971 was 75 percent. Australia became a significant factor in the Canadian market in the mid-1960's with imports increasing from one percent in 1960 to 26 percent of total canned peaches imports in 1969. Imports from Australia then declined to 15 percent in 1971. South Africa had 10 percent of the market in 1971. Australia's increased exports to Canada in the mid-1960's was largely the result of an aggressive promotion program by Australia and a very low priced product resulting from unusually high yields in that country. A number of adjustments have now been made in Australia to improve the profitability of their industry. This has resulted in higher export prices and therefore, the loss of a large portion of the market gained in the mid 1960's.

Similar to canned imports, fresh peach imports are mainly from the U.S.

WORLD PEACH PRODUCTION

Although Australia and South Africa are considered to be major peach producers and exporters, several other countries produce greater quantities of peaches. For example, Japan, Spain, Italy, France and Greece each produce more peaches than Australia or South Africa. However, these countries have large populations which utilize most of their domestic production. Greece and Spain each market small quantities of peaches in Europe.

With the exception of the United States, every major peach producing country has very significantly increased production. France and Italy, members of the Common Market, have experienced significant increases. France increased total production from 244 million pounds in the mid-1960's to 1,355 million pounds in 1968 and Italy increased production from 615 to 1,955 million pounds. Most of the increase in production was in the late 1950's and early 1960's.

As a result of increasing world wide production, Australia and South Africa will be forced to look for markets where competition is less severe. One such market will be Canada. Although a small market at present, an increasing population, a stable or declining

TABLE 8. CANADIAN PEACH CONSUMPTION AND PRODUCTION

Year	Apparent Fresh Disappearance	Apparent Canned Disappearance ¹	Total Disappearance	Total Production	Disappearance Minus Production
000's of lbs					
1946	79,950	38,080	118,030	107,250	10,780
1947	77,450	43,024	120,474	84,050	36,424
1948	46,650	41,136	87,786	88,000	- 214
1949	42,800	48,823	91,623	100,550	-8,927
1950	35,450	49,644	85,094	61,100	23,994
1951	49,650)	50,538)	100,188	89,600	10,588
1952	117,750)	52,012)	169,762	145,850	23,912
1953	113,150) 88,690	60,362) 56,981	173,512	144,650	28,862
1954	84,650)	57,701)	142,351	121,250	21,101
1955	78,250)	64,292)	142,542	144,150	-1,608
1956	84,100)	63,484)	147,584	83,350	64,234
1957	88,150)	66,662)	154,812	140,050	14,762
1958	116,700) 99,580	75,416) 69,514	192,116	152,150	39,966
1959	106,500)	69,439)	175,939	132,250	43,689
1960	102,450)	72,571)	175,021	118,100	56,921
1961	115,900)	78,320)	194,220	153,750	40,470
1962	86,750)	73,586)	160,336	116,800	43,536
1963	98,900) 97,270	72,451) 77,157	171,351	118,650	52,701
1964	99,700)	85,627)	185,327	143,100	42,227
1965	85,100)	75,802)	160,902	80,300	80,602
1966	97,692)	83,208)	180,900	104,250	76,650
1967	81,703)	79,590)	161,293	82,300	78,993
1968	101,282) 99,272	79,920) 76,463	181,202	95,800	85,402
1969	103,064)	72,184)	175,248	83,000	92,248
1970	112,618)	67,414)	180,032	110,400	69,632

¹ At actual weight.

SOURCE: Statistics Canada

production level and relatively high prices, compared to other countries, will make Canada an attractive market outlet.

THE PROCESSING MARKET

Although there is a variety of processed products, the predominant type is a canned, syrup pack. The remaining portion of the crop sold for processing is used for baby food, preserves and various related dessert uses.

In terms of structure, the industry consists of a large number of producers, a relatively small number of processors, a producer marketing organization in both major producing provinces and a significant number of wholesale and retail establishments. Processing prices are generally determined through negotiations between the canners and the Tender Fruit Marketing Board in Ontario and the B.C. Tree Fruit Agency in British Columbia on behalf of the growers.

A sharp decline in the number of firms canning fruit suggests that the processing segment of the industry is undergoing a period of significant adjustment. The sharpest decline in the number of plants is in Ontario

where the number of peach canning plants declined from 19 in 1965 to the present four firms. Most of the canning firms or plants ceased operations entirely, while a few plants were purchased by other firms remaining in the industry. An exodus of this magnitude suggests that returns on investment are greater in other areas and that the tender fruit canning sector is in a state of decline. At present, the remaining firms appear to be in a stage of decision as to whether to continue or cease operations.

Much of the energy of the canning industry has been directed towards remaining competitive with imports. This has included cutting costs where possible, accepting lower returns, limiting promotion and little or no new product development. As a consequence of low profitability, the industry is suffering from a lack of new capital investment. If the overall economic climate of the tender fruit canning sector does not improve, it is possible that more firms will leave the industry. Some industry participants believe a complete abandonment of the canning segment of the industry could occur.

INDUSTRY PROBLEMS

Several factors adversely affect the maintenance of a viable peach canning sector in Canada. A lack of

continuity of supply of the raw product to processors is evidenced by a variation in production and sales to processing. The cost of producing peaches in Canada is higher than in California or Australia. Strong demand and high prices on the fresh market force the canning sector to raise prices or be content to handle a lower volume. The low volume, high production costs and high raw product are further complicated by high domestic processing costs brought about, in part, by unused capacity. These factors might be classified as major problems confronting the canning sector. There are other problems.

These other problems include pressures of urban expansion in production localities, adverse climatic and geographic conditions which confine production location as well as the size of operations and the small size of existing grower operations. A preference (as a result of price and appearance) by processors, buyers and some consumers for canned Clingstone peaches (not extensively produced in Canada), rather than for Freestone peaches also casts doubt upon the continuation of the canning sector in its present form.

SUMMARY

Because of increasing demand for fresh fruit and resulting higher prices, peaches have been diverted by the producer to the fresh market. The volume marketed through conventional fresh market channels has been increased. For those producers who were conveniently located, a new opportunity opened with the increased popularity of "pick-your-own" and farm or roadside markets. As an outlet for fresh peaches, farm retailing has become a very important factor.

The declining processing segment of the peach industry has evolved into a more or less residual position. Although prices for fruit in the processing sector have increased, they have not kept pace with returns realized from fresh market sales. As a result, the volume of fruit now processed is derived from: (1) producers who gear their operation primarily to the fresh market, but sell their excess to processors, particularly in years of high production; (2) the production of growers unable, at present, to gain a portion of the fresh market because of location, lack of buyer contacts, etc.; (3) those growers who believe the processing segment is important to them and who deliver a portion of their crops to the processors regardless of the fresh market situation; and (4) the production of those varieties not well suited to the fresh market.

Currently, the domestic industry is supplying only a small percentage of the total Canadian requirements of all canned tender fruit. With total consumption

remaining high, although fluctuating, imports have made up the large deficit. Currently, imports account for over 70 percent of the canned tender fruit consumed in Canada. Since 1969, imports from the U.S.A. have accounted for between 70 and 90 percent of the total imports.

In Ontario, only four firms process an appreciable quantity of peaches in syrup. In general, however, the canning of peaches and other tender fruit is only a portion of their activity. In British Columbia, several firms still process peaches and other tender fruit, although a considerable quantity of their raw product is imported.

The per capita consumption of fresh and canned tender fruit is expected to increase marginally. With little likelihood of a significant expansion of tender fruit production in British Columbia or Ontario, an increasing deficit in total available supplies of domestically produced tender fruit is evident. An ever increasing percentage of the total domestic production will be directed to the fresh market. This will result in an even greater deficit in the volume of domestically produced tender fruit available for canning in Canada.

The peach industry and in turn the tender fruit industry, in Canada is undergoing somewhat the same pattern of change as occurred in the Northeastern and Midwestern regions of the U.S. nearly 20 years ago. The canning segment of the industry in the U.S. provided a stabilizing influence on prices on the fresh market, as it has in Canada. However, as fresh market demand increased, fresh market prices increased and producers directed an increasing portion of their crop, especially peaches, to this market. The processing segment could not survive on uncertain supplies or surplus removal. Thus the canning of peaches, as we know it, has disappeared in the Northeastern and Midwestern States. The demise of peach canning in these regions was also influenced by the comparative advantage of the cling peach industry in California.⁵ The tender fruit industry in the Northeastern and Midwestern regions still exists and thrives, but it is oriented to the fresh market with some processing of tender fruit into types of finished products other than canned fruit in syrup.

It is evident that the canning segment of the peach industry cannot survive on the highly variable and diminishing quantities of fruit diverted from the fresh market in response to fluctuations in fresh market

⁵Yield differentials are perhaps the most significant variable. Cling peach yields in California average over 15 tons per acre while in Canada and Eastern and Midwestern U.S., yields average only five to eight tons per acre.

prices. Many plants or firms have already discontinued processing peaches. With the continuation of conditions as they are presently found in the industry, the peach canning sector will decline further.

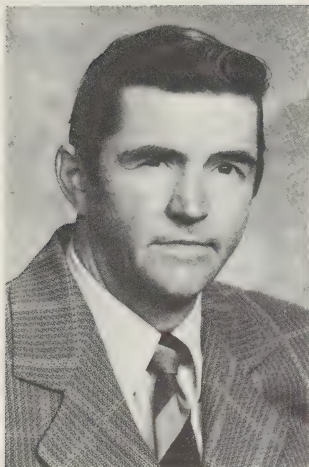
If the peach canning sector is to maintain its present level or increase in size, prices to growers for raw fruit will have to increase as growers are not prepared to accept returns below those obtainable on the fresh market. Although increased demand for both fresh and canned peaches has resulted in higher prices, prices on the fresh market have increased more than those in the canning sector. The smaller increase in the canned market price was caused by competition from imports.

Greater control of imports to allow for an increase in the canned product price would not necessarily solve the problem. Higher prices for canning peaches would attract some of the available volume from the fresh

market, and fresh market prices will increase further. This response in fresh market prices to higher canning peach prices might be avoided if production increases. However, new orchards require approximately five years before they start producing. Consequently, no easing of prices would be expected for at least five years. In addition, to increase returns to domestic production (only 20 percent of Canada's requirements), prices would be increased for all sales. The exact amount of the price increase is not known but it would be substantial in order for the canning sector to compete with fresh market prices.

A number of other alternatives could be discussed. The above analysis of import controls illustrates the complexity of the problem. The solution to the problem depends upon the costs involved in making the sector viable, who must bear the costs and whether sufficient production is forthcoming.

RAPESEED PRODUCTION COSTS IN WESTERN CANADA



L. M. Johnson *

INTRODUCTION

In 1971 rapeseed was the third largest crop grown on the prairies, ranking after wheat and barley in terms of both seeded acres and income to the producers. Rapeseed is a valuable addition to the crops produced in Western Canada. The first few acres were grown commercially as a war time measure in 1942. By 1948, under the stimulus of a guaranteed price of six cents per pound, rapeseed acreage increased to 80,000 acres. Then the price guarantee was discontinued and production declined sharply until 1950 when only some 400 acres were planted. Following this decline in production, private enterprise began to develop markets for rapeseed, thus stimulating production. In more recent years, the increasing problems of marketing cereal grains has encouraged more and more farmers to select rapeseed as an alternative crop.

The trend in rapeseed acreage, production and farm value is shown in Table 1. In each five-year period from 1953 to 1972, the acreage more than doubled. In addition, the average yields per acre increased, raising production as well as total farm value.

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The wide range in costs on individual farms can be attributed to the variations in the number of machine operations performed to prepare summerfallow or to produce rapeseed, as well as to the sizes and types of machines. The variations in the number of machine operations are often determined by weeds, soil, weather and topography.

The total production costs for all farms including crop service costs, machine costs and land taxes was \$15.67 for rapeseed on fallow. The breakeven point to meet these production costs is 14 bushels per acre when a charge of \$14.50 per acre is included for land investment, labor and management.

Related information on production costs and practices at the farm level were obtained from a survey of 125 rapeseed growers in Western Canada in 1971-72. Implement dealers provided machinery prices from which investment and depreciation charges were calculated. The operations studied were located in five rapeseed producing areas extending from northwestern Manitoba, across north central Saskatchewan and into northeastern Alberta (Figure 1). Growers were selected at random from a list of producers obtained from several grain shipping points within these areas. All sizes of farms were included, with the only restriction being that each grower had to have at least 50 acres of rapeseed.

Rapeseed grown in Western Canada is sold under quota regulations set by the Canadian Wheat Board. In the past, however, as the crop year advanced, the quotas opened up and generally had little or no effect on the amount the producer could deliver. Growers felt that price uncertainty, high dockage and distance to processing plants were the main problems associated with the marketing of rapeseed. In recent months, the uncertainty of prices has been demonstrated when the average weekly cash quotation on the Winnipeg Commodity Exchange ranged from a low of \$2.40 per bushel to a high of \$3.92 per bushel for Canada 1 rapeseed. The producers visited said that in 1971 two-thirds of the rapeseed crop was delivered to an

CENSUS DIVISIONS FOR PRAIRIE PROVINCES

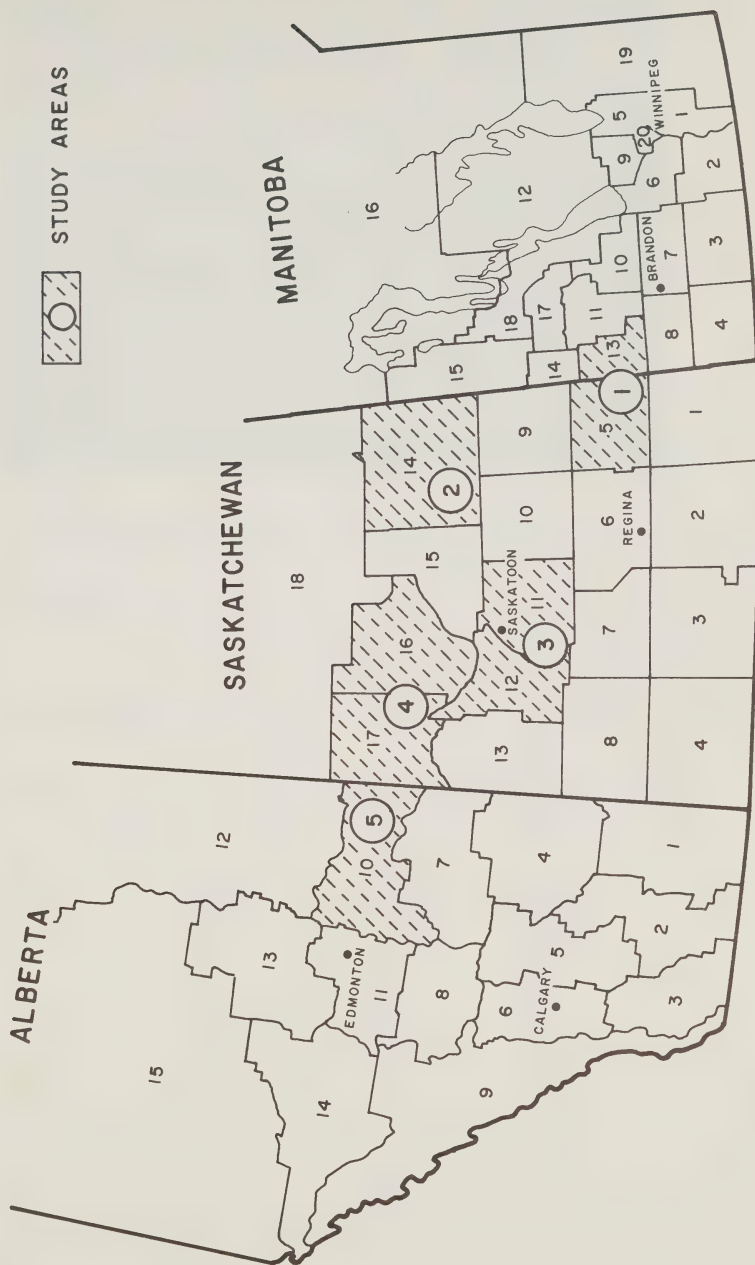


FIGURE 1



elevator company and about 30 percent to a processing plant. About 15 percent of the acreage was grown under contract by 15 percent of the farmers in this study.

MACHINE TIME AND COSTS

The times over for tillage practices, time taken, and the machinery costs to prepare summerfallow and grow rapeseed on fallow are shown in Table 2. Tillage, seeding

and harvest operations are those used in producing the 1971 rapeseed crop. All costs, however, reflect 1972 prices and include fuel, oil, grease, repairs, depreciation and interest on investment. There is no charge for labor or management.

The number of operations performed or times over to prepare summerfallow was lowest in Area 3 where the

TABLE 1. RAPESEED ACREAGE, YIELD PER ACRE, PRODUCTION, FARM PRICE AND VALUE, 1943 TO 1972.

Crop Year	Acreage	Yield Per Acre	Production	Average Farm Price	Total Farm Value
	thousand acres	bushels	thousand bushels	dollars	thousand dollars
Average 1943-47	22	11.4	206	—	—
Average 1948-52	25	14.5	404	1.96 ^a	384
Average 1953-57	236	14.7	3,457	1.71	5,783
Average 1958-62	537	15.1	7,900	1.75	13,476
Average 1963-67	1,170	16.4	18,938	2.41	48,595
1968-69	1,052	18.4	19,400	1.83	35,484
1969-70	2,012	16.6	33,400	2.29	76,494
1970-71	4,050	17.8	72,200	2.29	165,235
1971-72	5,475	18.0	98,500	2.11	207,835
1972-73	3,270	17.5	57,300	2.62 ^b	150,126
Average 1968-72	3,172	17.7	56,160	2.23	127,035

^a Average farm price from 1949-50 to 1951-52.

^b Average farm price for period August, 1972 to March, 1973.

SOURCES: Handbook of Agricultural Statistics, Part I — Field Crops, Catalogue No. 21-507, and Quarterly Bulletin of Agricultural Statistics, Catalogue No. 21-003, Statistics Canada, Ottawa.

TABLE 2. TIMES OVER, HOURS PER ACRE AND MACHINERY COSTS TO PREPARE SUMMERFALLOW AND PRODUCE RAPESEED ON SUMMERFALLOW BY AREA, PRAIRIE PROVINCES, 1972.

Area and Item	Summerfallow			Rape on Fallow		
	Times Over	Total Hours	Acre Cost	Times Over	Total Hours	Acre Cost
	— number —		— \$ —	— number —		— \$ —
Area 1						
Previous fall	1.00	.12	.59	—	—	—
Following summer	6.48	.63	3.38	—	—	—
Before seeding	—	—	—	2.86	.23	1.19
Seeding	—	—	—	1.00	.15	.95
After seeding	—	—	—	1.38	.06	.23
Harvest	—	—	—	3.00	.28	2.65
TOTAL	7.48	.75	3.97	8.24	.72	5.02
Area 2						
Previous fall	1.33	.14	.74	—	—	—
Following summer	7.74	.70	3.92	—	—	—
Before seeding	—	—	—	2.52	.21	1.15
Seeding	—	—	—	1.00	.15	1.02
After seeding	—	—	—	2.09	.07	1.90
Harvesting	—	—	—	3.00	.28	2.89
TOTAL	9.07	.84	4.64	8.61	.71	6.96
Area 3						
Previous fall	.04	.01	.03	—	—	—
Following summer	5.41	.47	2.75	—	—	—
Before seeding	—	—	—	2.08	.15	.86
Seeding	—	—	—	1.00	.12	.95
After seeding	—	—	—	.60	.02	.25
Harvest	—	—	—	3.00	.27	2.93
TOTAL	5.45	.48	2.78	6.68	.56	4.99
Area 4						
Previous fall	.60	.07	.35	—	—	—
Following summer	5.92	.64	3.23	—	—	—
Before seeding	—	—	—	1.84	.17	.85
Seeding	—	—	—	1.00	.13	.95
After seeding	—	—	—	.52	.01	.48
Harvest	—	—	—	3.00	.28	3.03
TOTAL	6.52	.71	3.58	6.36	.59	5.31
Area 5						
Previous fall	.88	.10	.57	—	—	—
Following summer	6.04	.64	3.61	—	—	—
Before seeding	—	—	—	2.32	.23	1.18
Seeding	—	—	—	1.00	.15	1.10
After seeding	—	—	—	1.48	.04	1.74
Harvest	—	—	—	2.92	.28	2.99
TOTAL	6.92	.74	4.18	7.72	.70	7.01

land was tilled 5.45 times compared with 9.07 times in Area 2. Thus, costs of preparing summerfallow were \$2.78 per acre in Area 3 and \$4.64 per acre in Area 2; a difference of \$1.86 per acre. This difference could result from Area 3's location in the prairie region where fewer operations are generally required because of the drier climate and less weed growth compared with Area 2 which is in the more moist parkland region.

Usually additional operations resulted in higher costs, but there were exceptions. For instance, in Area 1, 8.24 operations were performed in producing rapeseed on fallow at \$5.02 per acre; whereas in Area 5, 7.72 operations cost \$7.01 per acre. The higher costs in Area 5 were from aerial spraying for the Bertha Armyworm which considerably increased after-seeding costs. Also, harvest operations were more costly due to higher

investment and depreciation charges on more expensive harvesting equipment.

VARIATIONS IN COSTS

Table 3 shows average machinery costs, the standard deviation and the range of costs in each area and a summary for all areas. For all farms in the sample, the average cost of preparing summerfallow was \$3.85 per acre. Costs ranged from a low of \$1.76 per acre in Area 3 to a high of \$8.68 per acre in Area 5. The standard deviation of \$1.16 means that approximately two-thirds of the growers had costs ranging from \$1.16 above and below the average cost of \$3.85, i.e., from \$2.69 to \$5.01 per acre.

The main reason for the wide range in costs for preparing summerfallow or producing a crop is the difference in the number of field operations performed. Furthermore, the type of operation and the size of implement will influence the costs. Various local conditions such as type of soil, temperature, rainfall, topography and weeds often determine the type and number of field operations required for any particular sequence of field operations; hence costs are affected. Also, differences may be reflected in the managerial ability of

TABLE 3. AVERAGE MACHINERY COSTS, STANDARD DEVIATION AND RANGE IN COSTS FOR SUMMERFALLOW OPERATIONS AND PRODUCTION OF RAPESEED ON FALLOW IN FIVE AREAS, PRAIRIE PROVINCES, 1972.

Region and Item	Average Cost	Range in Cost		Standard Deviation
		Low	High	
— dollars per acre —				
Area 1				
Summerfallow	3.97	2.93	5.34	.59
Rape on fallow	5.02	3.15	7.00	1.05
Area 2				
Summerfallow	4.64	2.89	5.94	.82
Rape on fallow	6.96	4.34	8.69	1.20
Area 3				
Summerfallow	2.78	1.76	4.49	.67
Rape on fallow	4.99	3.91	6.87	.85
Area 4				
Summerfallow	3.58	2.40	6.28	1.19
Rape on fallow	5.31	3.27	7.30	1.00
Area 5				
Summerfallow	4.18	2.29	8.68	1.44
Rape on fallow	7.01	4.32	8.70	1.12
All Areas				
Summerfallow	3.85	1.76	8.68	1.16
Rape on fallow	5.85	3.15	8.70	1.39

the individual operators and the amount of resources at their disposal.

In Area 3 one farmer's costs for summerfallow preparation was \$1.76 per acre for only four operations, while in Area 5 the summerfallow costs were \$8.68 per acre for another farmer who went over his land 17 times. The machinery costs of producing rapeseed on fallow ranged from a low of \$3.15 per acre for a farmer in Area 1 to a high of \$8.70 per acre for a farmer in Area 5. However, the farmer in Area 1 performed only five field operations compared with eight for the farmer in Area 5. There are factors other than the number of operations that influence costs, some of which the farmer cannot control.

Although the ranges in costs are relatively high both within and among regions, the standard deviation of costs is relatively low. Two-thirds or more of the farmers in all areas had costs which, at the most, varied only about \$3.00 per acre for preparing summerfallow or for producing a crop.

Although some operators had higher machinery costs than their neighbors, their net returns were not necessarily lower. The additional inputs could have been more than offset by increased yields and greater net returns. Thus, every farmer must assess his own particular circumstances and account for all factors when planning his operations.

CROP SERVICES

The incidence of use, acres covered, and average costs of crop services to produce rapeseed on summerfallow are shown by the area in Table 4. The use of crop services varied considerably. For instance, in Area 2 fertilizer was applied to 96 percent of the rapeseed acreage by 96 percent of the farmers, while in Area 3 only one-third of the farmers applied fertilizer on 43 percent of the acreage. In Areas 2 and 5 about 80 percent of the farmers used insect spray on nearly 90 percent of the acreage; whereas in Area 1 insect sprays were not used. The infestation of the Bertha Armyworm, in some places, accounted for the large variation in the use of insect sprays. Seed cleaning was a relatively unimportant item because most of the seed was purchased and already cleaned.

Fertilizers, weed sprays and insect sprays were the most expensive items of crop services. Together they represent a large percentage of the production costs. For rapeseed on fallow, the average costs per acre of crop services on "farms with" in Areas 1, 2, 3, 4 and 5 were \$11.40, \$10.73, \$8.77, \$10.02 and \$10.46 respectively. A

TABLE 4. FARMS USING, ACRES COVERED AND AVERAGE COSTS FOR CROP SERVICES TO PRODUCE RAPESEED ON SUMMERFALLOW BY AREA, 1972.

Item	Cost Per Acre			
	Farms Using	Acres Covered	Farms With	All Farms
	— percent —		— dollars—	
Area 1				
Seed	100	100	1.31	1.31
Seed treatment	64	64	0.86	0.55
Weed spray	32	24	4.61	1.09
Fertilizer	77	87	2.49	2.16
Hail insurance	45	52	1.09	0.57
Crop insurance	36	29	1.04	0.31
Area 2				
Seed	100	100	0.97	0.97
Seed treatment	70	67	0.58	0.39
Weed spray	61	71	4.35	3.10
Insect spray	78	89	2.13	1.90
Fertilizer	96	96	2.29	2.19
Hail insurance	43	36	0.39	0.14
Seed cleaning	4	4	0.02	0.00
Area 3				
Seed	100	100	0.90	0.90
Seed treatment	54	61	0.60	0.37
Weed spray	4	6	3.69	0.22
Insect spray	8	8	0.71	0.06
Fertilizer	33	43	2.04	0.87
Hail insurance	58	64	0.82	0.52
Seed cleaning	4	5	0.01	0.00
Area 4				
Seed	100	100	0.78	0.78
Seed treatment	28	27	0.61	0.17
Weed spray	12	15	3.95	0.57
Insect spray	20	21	2.13	0.45
Fertilizer	60	72	2.12	1.53
Hail insurance	64	68	0.42	0.29
Seed cleaning	12	13	0.01	0.00
Area 5				
Seed	100	100	0.91	0.91
Seed treatment	20	25	0.66	0.17
Weed spray	36	29	2.66	0.76
Insect spray	80	89	2.13	1.89
Fertilizer	80	78	2.50	1.96
Hail insurance	60	61	0.51	0.31
Crop insurance	16	19	1.08	0.21
Seed cleaning	24	24	0.01	0.00

greater variation in the costs might have been expected as there were considerable differences in the use of crop services. However, a low or high cost of a particular crop service in one area was often offset by a low or high cost of another service in a different area. For instance, in Area 1 nothing was spent for insect sprays, and crop and hail insurance was \$2.13 per acre while in Area 2, insect sprays cost \$2.13 per acre but hail and crop insurance was only 39 cents per acre.

If average costs per acre for "all farms" are accounted for, there is a much greater variation in the areas. For Areas 1, 2, 3, 4 and 5, the respective costs per acre of crop services were \$5.99, \$8.69, \$2.94, \$3.79 and \$6.21. These differing costs were chiefly determined by the kind of crop service provided and their extent of use on farms in each area.

RAPESEED PRODUCTION COSTS

The average production costs excluded land, labor and management for the five areas (Table 5). For all areas, crop services represented about 35 percent of the costs, machinery about 55 percent, and land taxes about 10 percent. There was, however, a considerable variation in the distribution of these costs among the areas.

A three-year rotation, (summerfallow succeeded by two crops), was general in the study areas. Thus, costs of summerfallow must be deducted from the returns of the two following crops. It was assumed that two-thirds of the benefits from summerfallow go to the first crop and that one-third goes to the second crop; therefore two-thirds of the summerfallow costs were allocated to the fallow rapeseed and one-third to the following crop. Similarly, two-thirds of the taxes on fallowed land were charged to the fallow rape crop and one-third to the succeeding stubble crop. In this section no charges have been made for transporting seed grain from an elevator or seed plant to a farmyard or, subsequently, from a bin to a field. Storage costs were not included nor was there any charge for hauling harvested grain to the elevator or processing plant. Nevertheless, such operations are a part of the production process as they cost the farmer time and money.

Cost of producing rapeseed varied from farm to farm and area to area, reflecting the combined influence of a number of factors. Area 2 is the high-cost area where production costs averaged \$21.11 per acre compared with \$11.33 per acre in Area 3, the low cost area (Table 5). This wide difference in costs was associated with incidence of use for such crop services as weed and insect sprays and fertilizers. Also, machinery costs varied considerably from area to area.

The estimated farm price for rapeseed in the crop year 1971-72 was \$2.11 per bushel. Thus, the yield required to meet the defined production costs (Table 5) is estimated at 7.4 bushels per acre. Only two of the 125 farmers visited in 1971 had yields less than 7.4 bushels per acre and therefore could not meet average costs of production.

The production costs in Table 5 do not include a charge for land investment or for labor and management. Each

TABLE 5. AVERAGE PRODUCTION COSTS FOR RAPESEED ON SUMMERFALLOW BY AREA, PRAIRIE PROVINCES, 1972

	Area					
Item	1	2	3	4	5	All Areas
— dollars per acre —						
Crop Services Costs						
Seed	1.31	.97	.90	.78	.91	.92
Seed treatment	.55	.39	.37	.17	.17	.28
Weed spray	1.09	3.10	.22	.57	.76	1.10
Insect spray	—	1.90	.06	.45	1.89	.96
Fertilizer	2.16	2.19	.87	1.53	1.96	1.74
Hail insurance	.57	.14	.52	.29	.31	.33
Crop insurance	.31	—	—	—	.21	.08
Sub-total	5.99	8.69	2.94	3.79	6.21	5.41
Machinery Costs						
Summerfallow ¹	2.65	3.09	1.85	2.39	2.79	2.55
Before spring seeding	1.19	1.15	.86	.85	1.18	1.06
Seeding	.95	1.02	.95	.95	1.10	1.00
After spring seeding	.23	1.90	.25	.48	1.74	.91
Harvest	2.65	2.89	2.93	3.03	2.99	2.86
Sub-total	7.67	10.05	6.84	7.70	9.80	8.38
Land Taxes ²	2.05	2.37	1.55	1.57	1.85	1.88
Total costs ³	15.71	21.11	11.33	13.06	17.86	15.67

¹ Two-thirds of the summerfallow costs were charged to the fallow rapeseed crop and one-third to the succeeding crop.

² One and two-thirds years of land taxes were charged to the fallow rapeseed crop and one and one-third years to the succeeding crop.

³ Does not include land investment or a charge for labor and management.

farmer can assess the cost of his land investment and place a value on his labor and management. If, for instance, land is valued at \$100 per acre with an interest rate of 7 percent and labor charged at \$7.50 per acre, this added cost would be \$14.50 per acre. These charges, together with the average costs for all areas (Table 5), total about \$30.00 per acre. Therefore, the breakeven point in bushels produced and sold is increased to about 14 bushels per acre when rapeseed is valued at \$2.11 per bushel. Nine of the 120 growers who produced rapeseed on summerfallow had yields below 14 bushels per acre and consequently did not meet all production costs as defined to include charges for investment in land, labor and management.

TABLE 6. AVERAGE YIELDS, RANGE AND STANDARD DEVIATION OF YIELDS FOR RAPESEED ON SUMMERFALLOW BY AREA, PRAIRIE PROVINCES, 1971.

Item	Area				
	1	2	3	4	5
— bushels per acre —					
Rapeseed on Fallow					
Average	27	23	24	24	18
Range	2-40	8-40	8-34	15-36	11-22
Standard deviation	9	8	6	5	3

BREAKEVEN POINT

The average yields on summerfallow were the highest in Area 1, at 27 bushels per acre, and the lowest in Area 5, at 18 bushels per acre. Individual farm yields on fallow ranged from a low of two bushels per acre to a high of 40 bushels per acre. Provincial average yields in 1971 were somewhat below those obtained on the sample farms. Table 6 shows the average yields, the range and standard deviation of yields by area for rapeseed on fallow in 1971.

LAND USE AND CROPPING PRACTICES

Several crops were grown on most farms in all of the study areas. Rapeseed accounted for 13, 24, 14, 31 and 27 percent of the improved land in Areas 1, 2, 3, 4 and 5 respectively. Further expansion of the rapeseed acreage in Areas 2, 4 and 5 is probably limited because this crop now occupies a relatively high proportion of the improved land. To break the insect and disease cycle it is recommended that rape should not be seeded on land that has grown this crop in the previous two years. Many farmers said that there should be at least two to three years between rapeseed crops on the same parcel of land. Wheat was also an important crop in all areas. Summerfallow occupied over 35 percent of the improved land in all areas (Table 7).

TABLE 7. LAND USE BY AREA, PRAIRIE PROVINCES, 1971

Crop	Area				
	1	2	3	4	5
— average acres per farm —					
Wheat on fallow	141	111	235	115	97
Wheat on stubble	14	38	7	19	22
Durum on fallow	14	—	32	—	—
Durum on stubble	2	—	—	—	—
Barley on fallow	103	62	109	73	43
Barley on stubble	58	64	14	5	51
Oats on fallow	2	3	3	10	7
Oats on stubble	53	4	—	4	30
Flax on fallow	14	—	17	3	4
Flax on stubble	2	—	—	—	—
Rapeseed on fallow	107	194	144	322	228
Rapeseed on stubble	21	14	3	—	23
Rye on fallow	8	—	28	—	8
Rye on stubble	—	—	6	—	2
Other crops	82	48	33	55	81
Summerfallow	353	332	459	447	320
Total cultivated acres	973	870	1,090	1,053	916
Uncultivated land	289	80	125	223	225
Total farm acres	1,262	950	1,215	1,276	1,141

The practice of seeding rapeseed on summerfallow was usually followed by 90 percent of the farmers; seven percent said that they seeded both fallow and stubble land, and only three percent said that they generally grew rapeseed on stubble. Most farmers preferred to seed either wheat or coarse grains after the rapeseed crop as they felt that these crops helped to restore fibre to the soils, to reduce weed problems and reduce hazards from insects and disease. The most troublesome weeds were wild oats, wild millet and buckwheat.

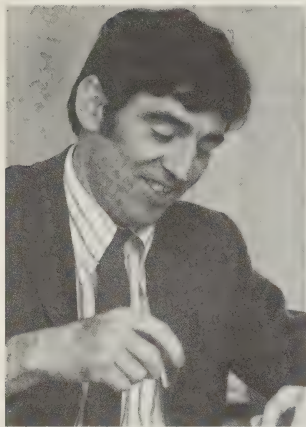
On the survey farms about three-quarters of the rapeseed acreage was fertilized, two-thirds had either hail or crop insurance, about 45 percent of the acreage was sprayed for insect pests and 30 percent for weeds. More than 70 percent of the farmers planted certified seed. The seeding rate averaged about six to seven pounds per acre. Generally, these growers considered rapeseed a permanent part of their cropping system.

A significant change in the varieties of rapeseed grown occurred during the last two years when farmers shifted quickly into the production of new varieties of rapeseed which have a low content of erucic acid. Both the Canada Department of Agriculture and the Rapeseed Association of Canada have promoted the change. It was estimated that more than 80 percent of the rapeseed planted in 1972 was of the low erucic acid varieties.

SUMMARY

- 1 Rapeseed acreage increased from about 3,000 acres in crop year 1942-43 to 5.5 million acres in 1971-72. Production in 1971 was estimated at 98 million bushels and valued at more than \$200 million.
- 2 For all farms studied the average machine costs of preparing summerfallow was \$3.85 per acre. Costs ranged from a low of \$1.76 per acre to a high of \$8.68 per acre with a standard deviation of \$1.16 per acre.
- 3 The average machine cost of producing rapeseed on summerfallow was \$5.85 per acre. Costs ranged from a low of \$3.15 per acre to a high of \$8.70 per acre with a standard deviation of \$1.39 per acre.
- 4 The wide range in costs on individual farms can be attributed to the variations in the number of machine operations performed to prepare summerfallow or to produce rapeseed as well as to the sizes and types of machines. The types and numbers of operations are often determined by various local conditions such as soil type, temperature, rainfall, topography and weeds.
- 5 About 75 percent of the rapeseed acreage was fertilized, 66 percent was covered by either hail or crop insurance, about 45 percent was sprayed for insects, and 30 percent was sprayed for weeds.
- 6 The average costs of crop services for rapeseed on fallow ranged from a low of \$2.94 per acre in Area 3 to a high of \$8.69 per acre in Area 2. Crop services include seed, seed treatment, fertilizer, weed sprays and insect sprays as well as hail and crop insurance.
- 7 Total production costs for all farms including crop service costs, machine costs and land taxes was \$15.67 for rapeseed on fallow. Breakeven point to meet these production costs excluding land investment, labor and management is estimated at 7.4 bushels per acre.
- 8 It is estimated that the breakeven point is 14 bushels per acre when a charge of \$14.50 per acre is included for land investment as well as labor and management.
- 9 The common practice was to plant rapeseed on summerfallow. Usually the rapeseed crop was followed by wheat or coarse grains but in some instances the land was summerfallowed.

FARM-FOOD MARKETING COSTS



P. Moore *

The "farmer's share of the consumer's food dollar" decreased from 42 percent in 1961 to 36 percent in 1971. However, the marketing bill proportionate to consumer expenditures for farm foods increased from 58 percent in 1961 to 64 percent in 1971.

The volume of food marketed between 1961 and 1971 increased by almost 40 percent, while the cost of marketing an equivalent quantity rose by 47 percent.

INTRODUCTION

The farm level value of agricultural products sold off Canadian farms for domestic food consumption was \$2.9 billion in 1971. When these food products were purchased by Canadian consumers, another five billion dollars had been added, bringing their total value at retail close to eight billion dollars. Thus, the marketing sector had absorbed an estimated 64 percent of consumers' spending on home grown farm foods in 1971. Moreover, marketing margins have tended to increase both in absolute terms and as a percentage of retail food prices.

Consumer expenditures for Canadian farm foods consist of two parts: (1) the share that the producers get, which represents primarily the returns for the production of raw food materials and (2) the share going to food manufacturers and distributive firms and agencies for all functions necessary to get food products to consumers in the form, time and place desired. For convenience, the second group are referred to in this article as the marketing sector and returns to it are termed the "marketing bill". "Farm value" denotes receipts by farmers.

CONSUMER EXPENDITURES ON DOMESTIC FARM FOODS

In recent years, Canadian consumers have been purchasing increasing amounts of foods originating on Canadian farms. Expenditures on these foods in 1971 were close to \$8 billion, as compared to \$4.3 billion in 1961, representing an overall increase in a decade of 87 percent (Figure 1 and Table 1). Part of this increase was reflected in higher returns to producers but most of the increased consumer outlay went to the marketing sector. Farmers received \$2.9 billion for products sold for domestic food consumption in 1971, 62 percent more than in 1961. The difference between what farmers receive and what consumers pay for farm foods is the total cost of transporting, processing, wholesaling and retailing the food products, i.e. the marketing bill¹. Thus, the marketing bill amounted to almost \$5.1 billion (in 1971), having increased by an estimated 105 percent over its 1961 level².

¹For a more detailed analysis together with data for earlier years see:

- (a) Royal Commission on Price Spreads of Food Products, September 1959, Vol. 2, Pages 118-138.
- (b) Cann & Rayner, "Marketing Cost of Food in Canada". Canadian Farm Economics. Vol. 1 No. 4, Oct. 1966.
- (c) Cann, "Marketing Bill", Canada Agriculture, Summer 1969.

²Estimates differ from data published in 1 (b) and 1 (c) due largely to revisions in estimates of consumer expenditures on food away from home.

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CANADIAN FARM FOODS CONSUMED DOMESTICALLY

LION DOLLARS

BILLION DOLLARS

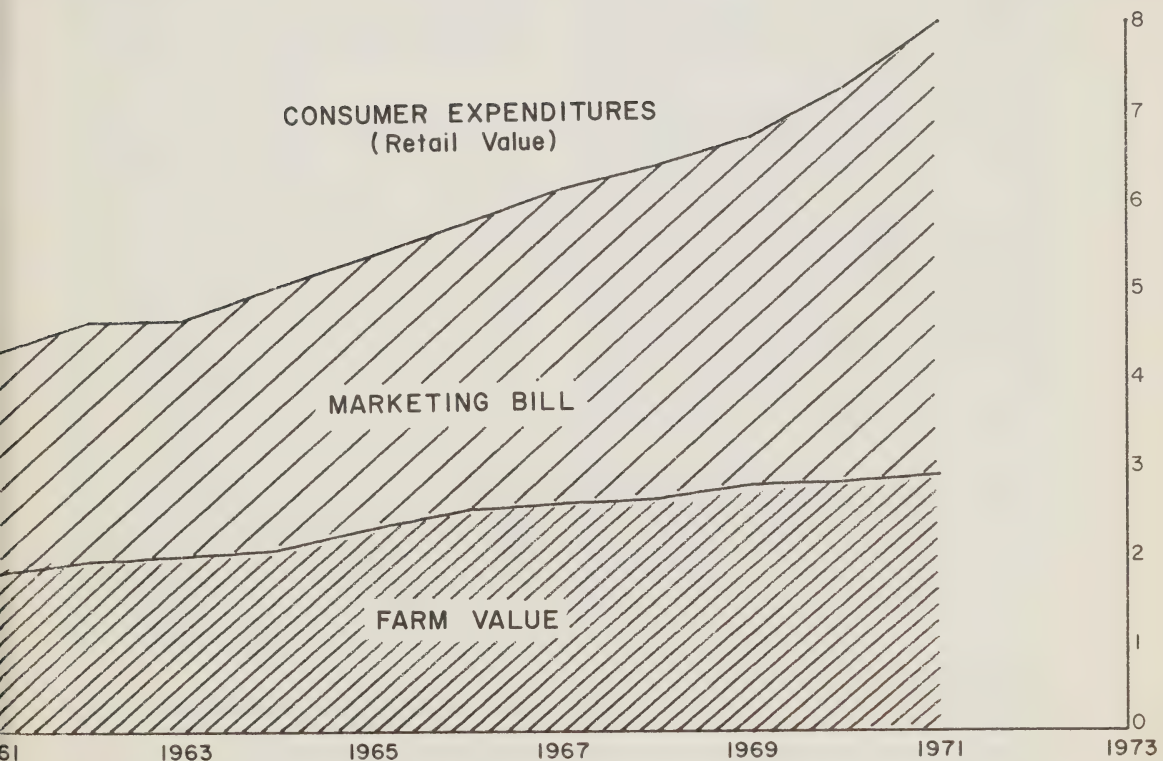


FIGURE 1

TABLE 1. CANADA: CONSUMER FOOD EXPENDITURES, MARKETING BILL AND FARM VALUE AS A PROPORTION OF DISPOSABLE INCOME, 1961-71

Year	Personal Disposable Income	Consumer Expenditures ¹	Canadian Farm Foods Marketing Bill ²	Farm Value ³	Consumer Expenditures For All Foods ⁴
Million dollars					
1961	26,904	4,265	2,478	1,787	5,810
1962	29,340	4,620	2,691	1,929	6,076
1963	31,168	4,640	2,647	1,993	6,374
1964	33,049	5,023	2,967	2,056	6,745
1965	36,263	5,365	3,069	2,296	7,156
1966	39,901	5,743	3,230	2,513	7,646
1967	43,123	6,118	3,537	2,581	8,157
1968	46,820	6,378	3,748	2,630	8,515
1969	50,906	6,697	3,904	2,793	9,135
1970	53,986	7,260	4,445	2,815	9,706
1971	59,401	7,986	5,089 ⁵	2,897 ⁵	10,365
Percent of Personal Disposable Income					
1961	—	15.9	9.2	6.6	21.6
1962	—	15.7	9.2	6.5	20.7
1963	—	14.9	8.5	6.4	20.5
1964	—	15.2	9.0	6.2	20.4
1965	—	14.8	8.5	6.3	19.7
1966	—	14.4	8.1	6.3	19.2
1967	—	14.2	8.2	6.0	18.9
1968	—	13.6	8.0	5.6	18.2
1969	—	13.2	7.7	5.5	17.9
1970	—	13.4	8.2	5.2	18.0
1971	—	13.4	8.6 ⁵	4.9 ⁵	17.4

¹ Excludes expenditures for imported foods, fish and food consumed directly on farms where produced.

² The difference between consumer expenditures and farm value.

³ Values of inedible by-products, non-food products and exports are not included.

⁴ Includes food for use at home and away from home.

⁵ Preliminary.

Source: Based on data available from Statistics Canada.

Expenditures on Canadian produced farm foods as presented in this article differ in a number of respects from the Statistics Canada estimates of consumer expenditures on all foods³. Deducted from the official estimates is the value of imported food sold in Canada and retail sales of fish and fish products. The imputed value of foods produced for home consumption on farms is also deducted, since it does not enter the marketing system.

In terms of values, slightly more than one-fifth of all food consumed by Canadians is imported. Retail spending on fish and the value of food products consumed directly in farm households average about 3.5 percent of annual food expenditures. Therefore, this analysis of costs of marketing domestically produced farm foods

deals only with approximately 75 percent of all consumer food expenditures.

Likewise, the estimates of farm value presented here do not include all products sold off Canadian farms as reported by Statistics Canada.⁴ Excluded are the sales of all non-food farm products, inedible food by-products and those sales destined for export. Between 1961 and 1971 the proportion of receipts⁵ from final sales off farms attributable to food products sold for domestic consumption ranged between 60 and 70 percent.

The more rapid growth in marketing costs than in the farm-gate value of food products is also evident from the changing shares of consumer food expenditures going to producers and to the marketing sector. Expressing farm

³ Personal Expenditures on Food and Non-Alcoholic Beverages (consumed at home) And Expenditures on Food Away From Home.

⁴ "Cash Receipts from Farming Operations in Canada".

⁵ Excluding direct government payments.

value as a proportion of consumer expenditures for farm foods results is a statistic commonly known as the "farmer's share of the consumer's food dollar". In 1961, the farmer's "share" was 42 percent. By 1971, this "share" had declined to 36 percent. On the other hand, the marketing bill, proportionate to consumer expenditures for farm foods, increased from 58 percent in 1961 to 64 percent in 1971.

VARIATION IN MARKETING COSTS OVER TIME

Since the marketing bill is a measure of the cost of all services and non-farm materials in expenditures for food of domestic farm origin, changes in its level can result from changes in both prices and amounts of marketing services and non-farm materials. The costs of labour, transportation, advertising and capital as well as the rates of business taxes and corporate profits are factors affecting the prices of marketing services. Changes in amounts of marketing services arise from shifts in food expenditure patterns between food products with a large and a modest non-farm content.

A major reason for the increase in aggregate marketing costs during the past decade has been the greater volume of food passing through the marketing system to meet the demands of Canada's increasing population. Also, Canadians have been buying foods with more processing and services. Convenience and designed foods are in greater demand. More of the home preparation is built into the retail product and the cost of this built-in element has risen more than the cost of the food ingredient. Many snack foods have been specially designed, there is a greater demand for gourmet foods, and eating out is costing more.

Several factors account for this trend toward more processing and marketing services. Changes in social conditions, urbanization, technology and competitive pressures all play a part. A critical factor is that consumers appear to be demanding and to be able to pay for such activities. Food spending as a proportion of income has been declining for the average Canadian family and this has given them more discretionary buying power with which to pay for added marketing services.

In 1971, the proportion of personable disposable income spent on domestically produced farm foods was 14.6 percent compared with an average 15.9 percent in 1961 (Figure 2). This relative decline in consumer expenditures on farm foods was also reflected in smaller shares of income on both marketing services and raw food materials. Expenditures on food marketing services were 8.6 percent of disposable income in 1971, only slightly

less than the proportion in 1961. The value of expenditures on farm food products proportionate to income declined from 6.6 to 4.9 percent in a decade.

Many of the changes in social conditions contributing to more services results from or are associated with income increases. If more married women are working, then the types and kinds of foods and services associated with food purchases will be different. The number and kinds of food preparation and storage facilities in the home will also affect the types of food purchased.

Urbanization of Canada requires some additional activities in food marketing. As more people are massed in large cities, more food must be shipped greater distances, requiring more processing. There is a growing emphasis on safeguards to health and sanitation, which often add to costs.

Technological change has played a leading role in expanding food processing, and in addition to the many new foods, traditional foods are undergoing more processing. Invention and innovation in packaging, freezing, curing, canning, cooking and dehydrating allow factory processes to bring many foods to a stage on the grocer's shelf which affords substantial time saving in the home and kitchen preparation after purchase.

Competitive pressures and merchandising strategy also foster additional processing to differentiate a food product since it appears easier for consumers to differentiate a highly processed product than a slightly processed one. Competitive pressures and a food retailing strategy responsive to the buying behaviour of shoppers have also shifted the emphasis in the food industry to activities that sell and increase the salability of food products.

Packaging has become an instrument of merchandising by being decorative and more informative as well as useful and protective. The concept of "selling the whole store" has emerged. Carryout and cheque cashing facilities, air conditioning, music and parking lots are part of every modern supermarket. Their costs enter into store overheads and thus into every grocery bill.

Changes in wage rates are a measure of one of the factors affecting the prices of marketing services. Average weekly wages and salaries for employees in the food and beverage manufacturing industries increased 75 percent between 1961 and 1971⁶. Weekly earnings by employees in retail food stores increased somewhat more.

⁶ Review of Employment and Average Weekly Wages & Salaries. Cat. 72-201, Statistics Canada.

CONSUMER EXPENDITURES FOR CANADIAN FARM FOODS RELATIVE TO INCOME

PERCENT OF DISPOSABLE
INCOME

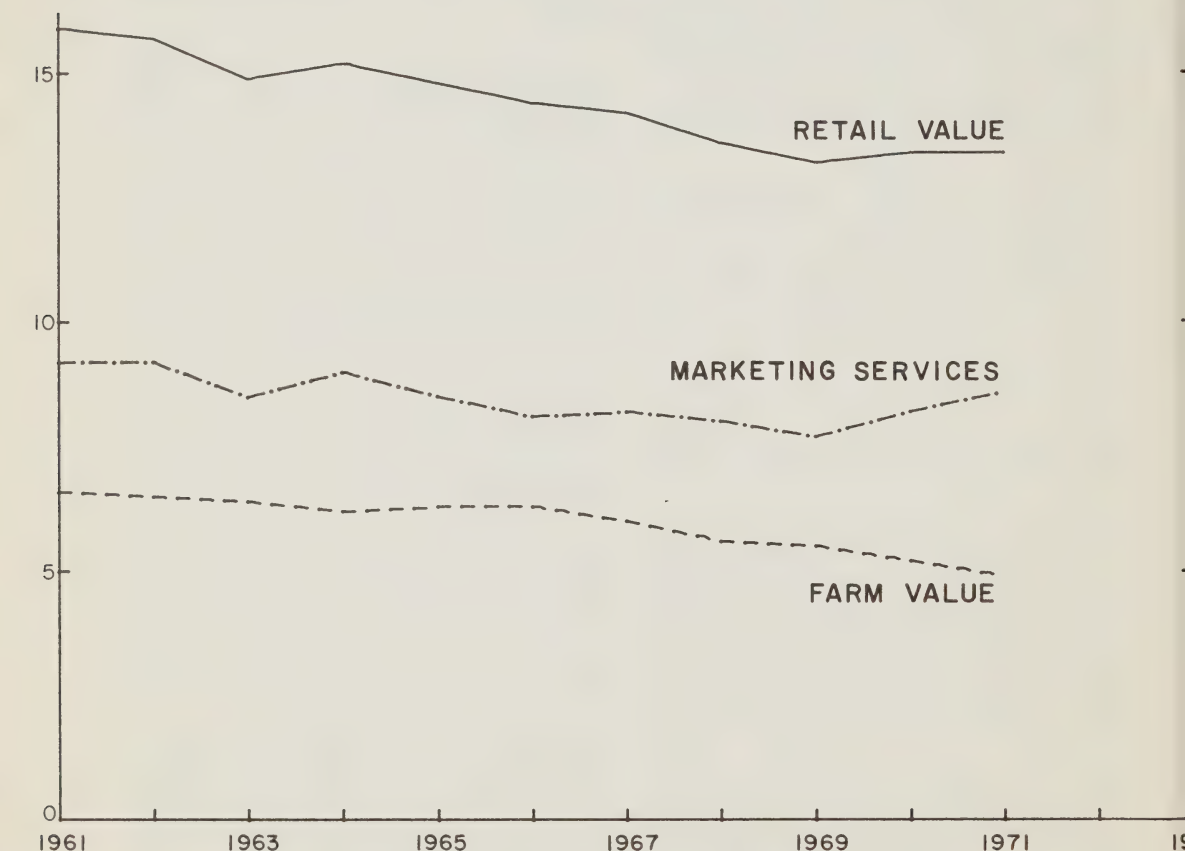


FIGURE 2

There are also factors with a partially offsetting effect on increases in marketing costs. Technological advances and improved management techniques have increased technical efficiency. Deliveries have been speeded by use of pallets in shipping and data-phone systems which enable buyers to transmit orders directly to computers located in manufacturers' plants and warehouses. Bulk assembly has reduced labour in the dairy processing industry. Continuous dough machines and bulk handling of ingredients have been major advances in the baking industry. The creation and recent emergence of meat analogs, such as those used in "superburgers", could greatly influence the meat industry in the future.

A significant development in the structure of the food processing sector has been the increasing concentration of management and control. One in every four establishments manufacturing food and beverages closed between 1961 and 1970⁷. Meanwhile, their total sales increased by over 70 percent. Food retailing has also seen an overall decline in the number and an increase in the size of outlets, and to some extent, the attrition has been in the independently owned family type grocery stores. Corporate chains and retailers in voluntary groups have increased in number and expanded in sales volume.

A common indicator of efficiency is labour productivity. Between 1961 and 1970 output per worker in food and beverage manufacturing increased by 25 percent.

It is difficult to measure all the changes in the factors affecting the prices and amounts of marketing services. No analysis is available to indicate the relative importance of these factors in contributing to or offsetting higher marketing costs. In general, however, the doubling of the marketing bill from 1961 to 1971 resulted from two things: (1) the greater physical volume of food entering the marketing system and (2) the increased cost of marketing including more and higher priced services.

It is estimated that the volume of food marketed in this period increased by almost 40 percent while the cost of marketing an equivalent quantity or basket of food rose by 47 percent. The increase in the amount of services associated with this rise in the cost of marketing a basket of food was approximately 5 percent, but the advance in costs per unit of the services was about 40 percent.

ESTIMATING THE MARKETING BILL

The data requirements for calculation of the marketing bill are extensive, and a considerable element of assump-

tion is involved, although much of the necessary data are already computed as part of the National Accounts and for other economic series compiled by Statistics Canada. The marketing bill statistics are not calculated directly, but are arrived at by taking the differences between the aggregate values at the farm level of marketed food products from aggregate retail expenditures on those products. Farm value is estimated by multiplying equivalent quantities of raw food products (purchased for domestic use) by their farm prices and deducting the imputed values of inedible by-products. The farm prices used are the same as those used by Statistics Canada in calculating "Cash Receipts from Farming Operations in Canada".

In obtaining the aggregate value of consumer expenditure on domestic farm foods, the estimated retail value of imported farm foods, retail spending on fish and the value of farm foods consumed directly in farm households are deducted from the official estimates of consumer expenditures for all foods. The value of food imports is reported by Statistics Canada on the basis of f.o.b. values at the point of shipment. To obtain an estimate of its value at retail, it is necessary to raise the port value by the overall cost of shipping and marketing the food within Canada. Marketing margins for selected imports are calculated by taking the differences between their f.o.b. unit values and the average retail prices for similar products in the food component of the Consumer Price Index. These margins are then used to estimate the mark-ups for commodity groupings which are used to arrive at the overall mark-up. The surveys of family food expenditures carried out by Statistics Canada in 1962 and in 1969 were used as the basis for estimating retail spending on fish and fish products.

CONCEPTUAL PROBLEMS

In developing a procedure to measure the costs attributable to the farm-food marketing sector an accounting system must be developed which separates the sector from associated sectors of the economy. Definitions of both "food" and "marketing" are necessary. These are best chosen with a concern for the realities of the structure and operations of the sector including the types of available data. Food can be defined as including or excluding animal feeds, whether for farm or domestic animals. Since the main interest in food marketing lies in human food and since one of the principal statistics, consumer expenditures for food, is restricted in this way, a corresponding definition seems logical and convenient. However, this leads to difficulties in analyzing other data. It becomes necessary to estimate the retail value of imported foods and determine the amount of all farm output used for human food in Canada.

⁷General Review of the Manufacturing Industries of Canada, Cat. 31-203, Statistics Canada.

Food marketing activities are carried out by a wide variety of firms, agencies and individuals, within agriculture, within the food manufacturing and distributive sectors and even outside these sectors. Examples of outside marketing functions include firms providing non-food raw materials or services of various sorts, and customers providing services for themselves. Storing and preparing food for sale on the farm are marketing functions within agriculture. Although it would be almost impossible to measure the marketing activities of farmers and consumers, it is appropriate to note that changes in the magnitude of these activities will have an effect on the cost of marketing by normal agencies. A related but diminishing problem is the proportion of food entering the marketing system and not being consumed directly on farms.

CONCLUSION

The aggregate measurement of the cost of marketing farm foods as described in this article should be considered as a first step in a more rigorous appraisal of the food marketing sector. The size of the marketing bill alone cannot answer questions about efficiency or profitability or any other criterion of performance. Nor does the related series, the "farmer's share of the consumer's food dollar", indicate the economic position of the producer. The important economic issue to the farmer, as to the food processor, or the retailer, lies in the total returns he can get for his products (services) less operating costs and depreciation charges. However, the marketing bill can be useful in supplying a broad base or bench-mark for use in comparing and appraising developments and trends between the primary and marketing sectors of the food system.

POLICY AND PROGRAM DEVELOPMENTS

AGRICULTURAL PRODUCTS BOARD ACT

(Dehydrated Potato Purchase and Sale Authorization)

Pursuant to the Agricultural Products Board Act, the Agricultural Products Board is authorized:

- (a) to purchase by tender and to store, transport, process or package, and enter into contracts for the storing, transporting, processing or packaging of quantities of dehydrated potatoes of a total cost not to exceed \$300,000,
- (b) to sell the above agricultural product to the Canadian International Development Agency.

AGRICULTURAL PRODUCTS MARKETING ACT

(Ontario Greenhouse Vegetable Order)

The Ontario Greenhouse Vegetable Producers' Marketing Board and the Farm Products Marketing Board of Ontario are each authorized to regulate the marketing of greenhouse vegetables in interprovincial and export trade and for such purposes may, with respect to persons and property situated within the Province of Ontario, exercise all or any powers like the powers exercisable by each of them, respectively, in relation to the marketing of greenhouse vegetables locally within that Province under The Farm Products Marketing Act and the plan for the marketing of greenhouse vegetables. (June 19, 1973)

AGRICULTURAL STABILIZATION ACT

(Manufacturing Milk and Cream Stabilization Order)

The prescribed price for manufacturing milk is 181.7 percent of the base price. The Agricultural Stabilization Board may, for the benefit of manufacturing milk and cream producers and for the purpose of stabilizing the price of manufacturing milk at the prescribed price, make payments to the Canadian Dairy Commission with respect to the period April 2, 1973 to March 31, 1974, in an amount of \$124,500,000. (June 5, 1973)

MUSHROOMS MARKET INQUIRY

Representations have been received to the effect that preserved mushrooms are being imported into Canada at

such prices, in such quantities and under such conditions as to cause or threaten serious injury to Canadian producers of like or directly competitive goods. The Anti-dumping Tribunal will undertake an inquiry, and report within 180 days, in respect of the importation into Canada of preserved mushrooms. (June 1, 1973)

FEED FREIGHT ASSISTANCE RATE CHANGES

An over-all increase in feed freight assistance rates across eastern Canada and British Columbia of 40 cents per ton was announced by Agriculture Minister Eugene F. Whelan on June 1, 1973. This increase will partly offset increased transportation costs that took place during 1972.

SASKATCHEWAN AND MANITOBA JOIN SMALL FARM DEVELOPMENT PROGRAM

Saskatchewan and Manitoba farmers who want to transfer land can arrange to buy and sell farms privately under the federally sponsored Small Farm Development Program.

The Small Farm Development Program consists of a land transfer program; assistance to land buyers and sellers; and information, rural counselling and farm management consultation for farmers who want such services.

Special credit is available to eligible purchasers. In addition to the normal loan provisions of the Federal Farm Credit Act which is administered by the Farm Credit Corporation under the S.F.D.P., a developing farmer is offered the advantage of buying additional land without a large down payment and without needing to mortgage the rest of his farm. Thus, he is free to use any cash or credit on previous holdings, to provide working capital to develop a larger and more profitable farm.

FARM CREDIT REPORTS INCREASED LENDING

The Farm Credit Corporation annual report shows 5,296 loans totalling \$186,300,000 were made last year compared with 4,035 loans totalling \$114,700,000 in 1971, an increase of 38 percent. Farm mortgage lending increased by 62.3 per cent compared with the previous year.

The Corporation attributes the increased lending in 1972 largely to a 43 percent increase in net farm income during the same period. A 1972 amendment to the Farm Credit Act raising the loan ceiling to \$100,000 for one or more farmers in a single farming business also had its effect on the volume of lending.

NEW COOPERATIVE SECTION ESTABLISHED

A new Cooperative and Producer Marketing Section has been established by Agriculture Canada in support of agriculture cooperatives. The new section in Agriculture Canada's Economics Branch is designed to help cooperative directors and officers solve problems they encounter at the federal, national, or international level. Section members will work with cooperative representatives in developing proposals for new federal programs of direct assistance to cooperatives. This section will also provide similar services to producer marketing boards.

FIFTEEN — POINT PROGRAM PROPOSED AT W.E.O.C.

Federal Agriculture Minister Eugene Whelan placed a 15-point action program before the Western Economic Opportunities Conference. Included was a new Crop Development Fund of \$1,000,000 to launch the fund and develop new crops, adapt new varieties to practical farm growing conditions and develop new protein sources.

The federal government will also pay up to 90 percent of the capital cost to launch a pilot plant at Saskatoon to develop new products and processing techniques for vegetable oils, proteins, and other crop derivatives.

Other points in the action program were:

- Additional federal meat research;
- Federal funds to help develop more teaching facilities for veterinarians;

- Federal action to improve the future for the Canadian fruit and vegetable industry, specifically, improvements in tariffs and marketing;
- An increase in cash advance payments;
- Announcement of a new national feed grains policy;
- A Prairie Grain Market Receipts Stabilization Plan;
- Expanded research for market development;
- Federal funds to finance additional university research on farm machinery, and federal funds for provinces who want to set up farm machinery evaluation and information programs;
- Programs to introduce stabilization measures for crops other than grains;
- Development of a new food market development coordinating council, with joint federal and provincial membership;
- Development of a national livestock strategy, which will dovetail with the new national feed grains policy;
- Additional initiatives to provide credit to young farmers to help them get established;
- An invitation to the provincial ministers of agriculture to participate in developing Canada's agricultural position for the forthcoming GATT negotiations.

INCREASE IN DAIRY SUPPORT

An increase of \$1.00 per hundred pounds in the federal support program for industrial milk became effective August 1, 1973. The increase provides a temporary subsidy of 56 cents per hundred pounds to producers on all deliveries of industrial milk and cream up to the level of individual farmers' market share quotas, a three-cents-a-pound increase in the support price of skim milk powder, and a reduction of 20 cents per hundred pounds in the export levy or holdback. This action will not increase the cost of milk products to the consumer. Skim milk powder is currently selling above the support price.

PUBLICATIONS

ECONOMICS BRANCH PUBLICATIONS

Available from the Economic Communications Unit, Agriculture Canada, Ottawa, K1A 0C5

August 1 Outlook '73, Hogs and Beef Cattle. Ottawa, 1973. 8p. Tables.

Summer Outlook, June 1973. Ottawa, 1973. 56p. Tables, charts.

These two booklets are produced by the Market Outlook Section, Marketing and Trade Division, Economics Branch. These publications give the expected trends of agricultural commodities.

The Tisdale Region of Saskatchewan. H.R. Fast and D.A. Neil. Prairie Regional Studies in Economic Geography No.11. February 1973. Tables, charts, maps. 173p. Publ. 73/4.

Publications. A List of Material Published from 1968 - 1972. Compiled by A. Trempe. Economics Branch. May, 1973. 19p. Publ. 73/9.

Working Paper on: Production Practices, Costs, and Return in Quebec Grain Corn Production. A federal employment stimulation project. Ottawa, June, 1973. Tables, maps. 36p. Publ. 73/10.

Canada's Trade in Agricultural Products: 1971 and 1972. Prepared by D.L. Bolton, Marketing and Trade Division, Economics Branch. 47p. Tables. Publ. 73/11.

AGRICULTURE CANADA PUBLICATIONS

Available from the information Division, Agriculture Canada, Ottawa, K1A 0C5.

Protein Sources for Livestock. Ottawa, 1973. Tables, illustrations. 24p. Publ. 1515.

Wheat Board Report: The Cost of Marketing Prairie Grain. Published by The Canadian Wheat Board, Department of Information, Winnipeg. Tables, charts. 4p.

The Canadian Wheat Board Annual Report 1971 - 72. Tables, charts. 105p.

Farm Credit Corporation Annual Report 1972 - 73. Ottawa, June, 1973. Bilingual. Tables, charts, map, illustration. 36p.

STATISTICS CANADA PUBLICATIONS

Available from the Publications Distribution Unit, Statistics Canada, Ottawa, K1A 0T7.

Census of Canada, 1971. Bulletins.

— 4.1.4 **Agriculture: Nova Scotia.** Ottawa, 1973. Tables, map. Cat. No. CS96-704. \$2.00 per copy.

— 4.1-5. **Agriculture: New Brunswick.** Ottawa, 1973. Tables, map. Cat. No. CS96-705. \$1.00 per copy.

— 4.2-2. **Agriculture: Ontario.** Ottawa, 1973. Tables. Cat. No. CS96-707. \$3.50 per copy.

— 4.3-3. **Agriculture: Alberta.** Ottawa, 1973. Tables. Cat. No. CS96-710. \$2.00 per copy.

Bread and Other Bakery Products. Ottawa, 1973. Bilingual. Quarterly. Cat. No. CS32-015. 25¢ per copy, \$1.00 per year.

Production of Poultry and Eggs, 1972. Ottawa, 1973. 24p. Tables, chart. Bilingual. Cat. No. CS23-202/1972. 50¢ per copy.

Farm Net Income, 1972. Ottawa, 1973. 13p. Tables. Bilingual. Cat. No. CS21-202/1972. 25¢ per copy.

Farm Cash Receipts, 1972. Ottawa, 1973. 12 p. Table Bilingual. Cat. No. CS21-201/1972. 50¢ per copy.

Sugar Situation. Vol. 52, No. 4, April 1973. Bilingual. Cat. No. CS32-013. \$1.00 per year, 10¢ per copy.

Wheat Review. Vol. 43, No. 10, May, 1973. Cat. No. CS22-005. \$3.00 per year, 30¢ per copy.

Stocks of Food Commodities in Cold Storage and Other Warehouses, 1972. Ottawa, 1973. 11p. Tables. Cat. No. CS32-217/1972. 50¢ per copy.

Pack, Shipments and Stocks of Selected Canned Fruits and Vegetables. Vol. 40, No.4, April, 1973. Bilingual. Cat. No. CS32-011. \$2.00 per year, 20¢ per copy.

Tobacco and Tobacco Products Statistics. Vol. 40, No. 1, March, 1973. Bilingual. Cat. No. CS32-014. \$2.00 per year, 50¢ per copy.

Biscuits and Confectionery. Vol. 11, No. 1, quarter ended March 31, 1973. Bilingual. Cat. No. CS32-016. \$1.00 per year, 25¢ per copy.

OTHER PUBLICATIONS

1972 Rural Real Estate Values in Alberta. R.J. Miller, W.S. Pattison. Available from Resource Economics Branch, Marketing Division, Alberta Dept. of Agriculture, Edmonton. May, 1973. Tables, maps. 34p.

Review of Agriculture, Prince Edward Island, 1971. R.M. MacDonald. Available from Economics, Planning and Marketing Branch, P.E.I. Dept. of Agriculture and Forestry. Tables, charts, maps. 24p.

Report of Canadian (Palliser) Grain Producers' Mission to Japan and South-East Asia. April, 1973, 38p. Available from Palliser Wheat Growers, Regina, Saskatchewan.

A Western View of Canadian Agricultural Policy. J.C. Gilson. March, 1973. Available from the School of Agricultural Economics and Extension Education, Ontario Agricultural College, University of Guelph. Tables. 23 p.

Législation sur le Commercialisation. October, 1972. Profil Agro-Alimentaire, No.1. Available from Ministère de l'Agriculture du Québec. Tables. 27p.

Consommation et Degré d'Auto-Approvisionnement. December, 1972. Profil Agro-Alimentaire, No. 2. Available from Ministère de l'Agriculture du Québec. Tables, charts. 60p.

PLEASE NOTE

Volume 8, Number 2, April 1973

Page 10, column 2, line 17 — "In the case of broiler chicken meat, Lee obtained a price flexibility of -0.267.*

*B. M. Lee, Economic Analysis of Factors Influencing Demand and Price in the Canadian Poultry Meat Industry. Unpublished master's thesis, Department of Agricultural Economics, University of Manitoba, February 1973.

Volume 8, Number 2, April 1973

Page 9 — An Approach to the Market Regulation of Broiler Chicken Meat, by N. L. Longmuir.*

*This article was developed from Nelson Longmuir's thesis completed at the University of Manitoba under the general direction of Dr. R. M. A. Loynes and based on research funded by the Canadian Turkey Federation, the Canadian Broiler Council and the Manitoba Marketing Board.

**IN REPLY TO AUTHORS AND EDITORS REGARDING AUGUST 73
CANADIAN FARM ECONOMICS**

I have read the following article(s):

- (1) The Small Farm Development Program
- (2) The Tender Fruit Industry in Canada
- (3) Rapeseed Production Costs in Western Canada
- (4) Farm-Food Marketing Costs

My comments are on article number

This article was: not useful 1 2 3 4 5 6 7 8 9 10 very useful.

Because (e.g., The most important economic and social factors were studied. The work was well documented and the conclusions were useful to me).

Beefs Bouquets (Suggestions to authors, publications committee and editors)

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NUMBER 5

OCTOBER 1973



CANADIAN FARM ECONOMICS

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Canada's Beef and Veal Trade**

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HON. EUGENE WHELAN, MINISTER — S.B. WILLIAMS, DEPUTY-MINISTER

Canadian Farm Economics is published bi-monthly by the Economics Branch, Canada Department of Agriculture, Sir John Carling Building, Ottawa, and is based on material prepared by economists of the Economics Branch.

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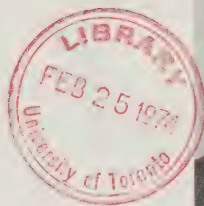
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Letters from readers: Letters are encouraged and should be addressed to the author or the Managing Editor. Responses . . . comments, suggestions and points of view are important for effective two-way communications. Letters may be used in the following issue of CFE and will be edited prior to publication where necessary.

THE CHANGING ECONOMIC PROFILE OF CANADA'S BEEF AND VEAL TRADE

The recent deterioration of Canada's trade balance in beef and veal has resulted from market increases in imports for manufacturing purposes and for the hotel and restaurant trade.

The increase in Canada's imports of beef and veal can be attributed to the rising domestic demand for beef, and the slower recent growth of beef output.



A.M. Boswell*

INTRODUCTION

This article attempts to answer several relevant questions about international trade in beef and veal. The pattern of Canada's beef and veal trade since the early 1950's, the trend in the kind and class of product traded and the foreign countries involved, and the influence of the changing characteristics of beef production and consumption on beef and veal trade are discussed.

It is the intent of this article to avoid the complexities of foreign trade in beef and veal in order to provide meaningful background information to a wide group of people interested in the Canadian beef industry. In this way the opportunities for increased Canadian participation in international trade in beef and veal are more apparent.

Throughout history, trade in agricultural products has been basic to Canada. Canadian trade in both exporting and importing has been voluntary. Basically, trade has occurred in response to price differences indicative of comparative production advantage. To trade was a better bargain than not to trade. However, trade in any one

commodity can affect different groups in different ways and for many, the discussion of Canada's beef trade is apt to be one-sided. Many consumers are concerned about high beef prices and cheaper sources. Beef producers are likely to be concerned about the effects of supplementary imports upon their livelihood. However, the Canadian beef producer's livelihood probably could be hindered more by the loss of exports than it could be improved by restricting imports.

IMPORTANCE OF BEEF AND VEAL TRADE

The extent to which Canada exports some of its beef and veal production is surprisingly large. An interesting indicator of Canada's foreign trade in beef and veal products is the percent of the value of total production involved in foreign trade (Table 1). The common denominator is value since various classes of product enter into Canada's beef and veal trade. The major export-import categories included in this analysis are: live cattle and calves for beef and veal purposes; dressed beef and veal, fresh or frozen; cured beef; canned beef and veal; cattle and calf hides including "Upper Leather" cattle and calf; and tallow¹. Over the years the export outlet has been an important safety valve for the Canadian beef industry.

*Mr. A.M. Boswell is an economist with the Marketing and Trade Division of the Economics Branch. The author acknowledges the contribution of J. Berry of the Economics Branch, in the recording of the Trade Statistics.

¹ Other meat trade categories in which beef and veal by-products are involved but not separated out are commented on at the end of the article.

TABLE 1. CANADA: FARM CASH INCOME FROM CATTLE AND CALVES AND VALUE OF FOREIGN TRADE IN BEEF AND VEAL (LIVE AND AS PRODUCT)¹

	Farm Cash Income	Exports		Imports	
	\$000	\$000	% of Farm Income	\$000	% of Farm Income
1955-59	466,880	58,599	13	19,662	4
1960-64	627,251	64,558	10	25,536	4
1965	789,984	126,121	16	24,050	3
1966	915,581	127,761	14	35,385	4
1967	929,723	73,052	8	49,074	5
1968	980,392	95,806	10	42,788	4
1969	964,117	89,162	9	82,086	9
1970	969,059	109,858	11	104,164	11
1971	1,080,251	108,802	10	109,454	10
1972	1,198,242	134,289	11	153,238	13

SOURCE: Statistics Canada, Ottawa

¹ Farm cash income is the farm value of cattle and calves whereas trade values reflect processing values for several trade items.

The facts apparent in Figures 1 and 2 provide a further perspective to the importance of trade, changing pattern of total trade, and the relative trade balance since the early 1950's. During the period 1950-1968, Canada maintained a strong net export surplus, but in 1969-70 the surplus narrowed considerably. For the years 1971-72, Canada was a net importer of beef and veal products.

The importance of the magnitude of the 1971-72 deficits can be more fully understood after considering that our trade surplus in the mid-1960's was nearly \$100 million annually. Changing price conditions in many world countries, in particular the U.S., made Canada a stronger market for beef and veal products in 1971-72.



FIGURE 1

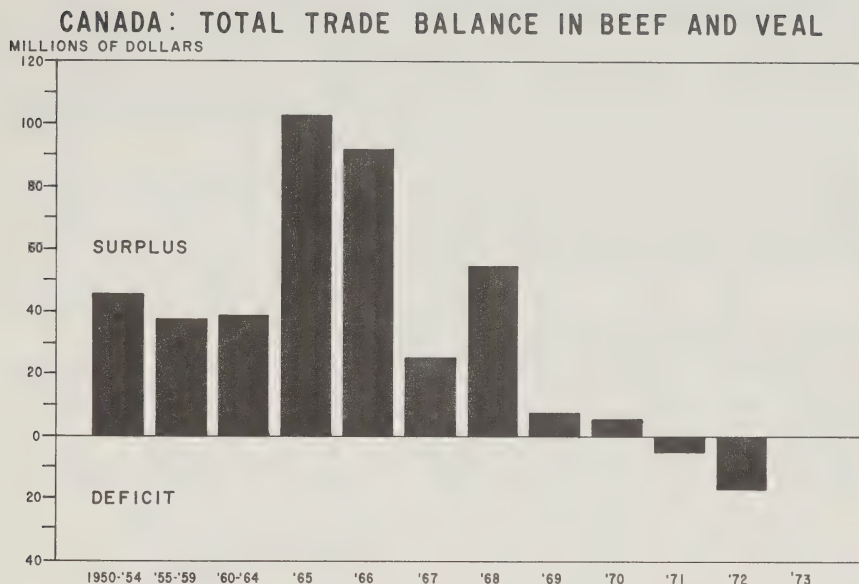


FIGURE 2

COMPONENTS OF BEEF AND VEAL TRADE

An "overview" of the relative importance of the various components of Canada's total trade in beef and veal, both in absolute terms as well as net dollar terms, is shown in Table 2. On a value basis, Canada currently is a net importer of dressed beef and veal, fresh or frozen, cured beef, and canned beef and veal. On the other hand, Canada is a net exporter of hides, tallow, and with the exception of 1971, live beef and veal animals. In 1972, the net effect was a trade deficit of \$18.9 million.

Of the \$134.3 million exported in 1972, the U.S. accounted for 73 percent or \$97.4 million with the balance of \$34 million going to several other countries. The value of imports at \$153.2 million was accounted for by the U.S. at \$77.6 million (51 percent), followed by Australia at \$36.8 million (24 percent), and New Zealand at \$27 million (18 percent). Together they accounted for 93 percent of Canadian imports.

For 1972, the largest export category was hides at \$41.8 million, and the largest import class was beef and veal, fresh or frozen, at \$88.8 million. In terms of net dollars, hides at \$22.2 million and tallow at \$14.4 million were the largest surplus components of Canada's beef and veal trade in 1972. The sharp reverse in Canada's trade balance for the first nine months of 1973 is mainly

accounted for by the exports of live cattle and raw cattle hides. Since September 1973, Canada's imports of U.S. cattle for slaughter have increased sharply.

Trade in Live Cattle and Calves

In value terms, Canada maintained a strong net export position in the total trade of live cattle and calves for beef and veal purposes until 1969 (Figure 3). Canada's exports of live cattle and calves for beef and veal purposes move in various trade categories as reported by Statistics Canada (Table 3).

Exports of calves 200 pounds or less have moved steadily upward during the last two decades. The peak year in export numbers occurred in 1972 at 144,400 head, valued at \$9.8 million. To the end of September 1973, exports have continued at high levels. Exports are primarily calves destined for veal slaughter to the U.S., but recently calves for further feeding have also been exported. The main U.S. outlets were the state of New York, the New England region and Michigan. However, in 1972 nearly 16,000 live calves were exported to countries in Western Europe for beef feeding, and to September 1973, 31,000 head have been exported with Greece and Italy the largest outlets. Nearly all of the live calf exports originate in Eastern Canada, mainly Quebec and to a lesser extent Ontario, and are a by-product of

TABLE 2. CANADA: COMPOSITE TRADE BALANCE IN BEEF AND VEAL (LIVE AND PRODUCT) BY DOLLARS, ALL COUNTRIES, 1950-54 TO JUNE 1973.

	Live Cattle and Calves			Beef and Veal Fresh or Frozen			Cured Beef			Canned ³ Beef and Veal
	Exports ¹	Imports ²	Balance	Exports	Imports	Balance	Exports	Imports	Balance	Imports
— Millions of \$ —										
1950-54	24.4	n.a.	+24.4	25.9	.6	+25.3	.1	2.3	-2.2	-3.8
1955-59	34.2	2.4	+31.8	9.8	3.5	+ 6.3	.2	2.7	-2.5	-4.4
1960-64	34.6	1.7	+32.9	9.0	7.6	+ 1.4	.4	3.9	-3.5	-4.1
1965	58.8	.3	+58.5	29.4	4.8	+24.6	.9	4.0	-3.1	-4.1
1966	51.1	1.7	+49.4	26.4	7.8	+18.6	.9	5.2	-4.3	-4.2
1967	20.2	10.1	+10.1	14.4	15.2	- .8	.6	5.9	-5.3	-5.4
1968	33.9	3.3	+30.6	23.7	14.4	+ 9.3	1.0	5.6	-4.6	-4.3
1969	23.2	4.6	+18.6	26.4	48.9	-22.5	1.0	4.8	-3.8	-6.7
1970	20.7	16.7	+ 4.0	48.5	63.9	-15.4	1.4	4.4	-3.0	-6.0
1971	20.7	26.6	- 5.9	47.0	58.0	-11.0	1.1	5.7	-4.6	-5.7
1972	35.0	28.9	+ 6.1	39.4	88.8	-49.4	2.3	6.4	-4.1	-8.1
1973 (to Sept.)	68.6	40.1	+28.5	48.0	90.5	-42.5	1.8	3.6	-1.8	-4.8

	Hides ⁴			Tallow			Total		Canada's Trade Balance
	Exports	Imports	Balance	Exports	Imports	Balance	Exports	Imports	Balance
— Millions of \$ —									
1950-54	7.8	6.2	+ 1.6	1.0	.4	+ .6	59.2	13.3	+ 45.9
1955-59	9.9	6.4	+ 3.3	4.5	.1	+ 4.4	58.6	19.7	+ 38.9
1960-64	13.1	7.7	+ 5.4	7.4	.5	+ 6.9	64.5	25.5	+ 39.0
1965	24.5	9.9	+14.6	12.5	.9	+11.6	126.1	24.0	+102.1
1966	37.5	15.7	+21.8	11.9	.8	+11.1	127.8	35.4	+ 92.4
1967	28.3	11.9	+16.4	9.6	.6	+ 9.0	73.1	49.1	+ 24.0
1968	28.0	14.1	+13.9	9.2	1.1	+ 8.1	95.8	42.8	+ 53.0
1969	28.7	15.4	+13.3	9.9	1.7	+ 8.2	89.2	82.1	+ 7.1
1970	24.0	11.1	+12.9	15.3	2.1	+13.2	109.9	104.2	+ 5.7
1971	21.3	11.6	+ 9.7	18.7	1.9	+16.8	108.8	109.5	- .7
1972	41.7	19.5	+22.2	15.9	1.5	+14.4	134.3	153.2	- 18.9
1973 (to Sept.)	44.4	16.1	+28.3	15.5	.7	+14.8	178.3	155.8	+ 22.5

SOURCE: Trade of Canada, Statistics Canada:

¹ Includes 200 pounds and under 200-700 pounds, 700 pounds and over and since 1967 purebred beef cattle.

² Primarily slaughter cattle from the U.S., and since 1967 purebred beef cattle.

³ No exports reported separately by Statistics Canada.

⁴ Includes raw cattle and calf hides, and since 1965 "upper leather cattle and calf."

the dairy sector. Traditionally, Canada has not imported live calves for veal slaughter. The increase in calf exports has resulted from a strong specialty market for white veal in the Northeastern U.S., and the increasing demand for beef fostered by tourism in the Mediterranean area of Europe.

Exports of animals 200-700 pounds are basically feeder cattle from Western Canada which go primarily to the U.S. for feedlot finishing. This category of live exports has followed an irregular pattern, but remains in a net export position since Canada imports virtually no feeder

cattle. Exports reached very high levels during the mid 1960's, approximating \$30 million annually, but then dropped dramatically to a low of one million dollars in 1970. In 1972, exports of this category increased substantially to 60,600 head valued at nearly \$10 million, and for the first nine months of 1973 totaled 116,700 Head valued of \$29.1 million.

The decline in feeder cattle exports to the U.S. was related to the retention of beef heifers for herd expansion, and especially to the increase in cattle feeding in Canada.

TABLE 3. CANADA: EXPORTS OF LIVE CATTLE FOR BEEF AND VEAL PURPOSES TO THE U.S.A. AND ALL COUNTRIES, 1950 TO 1973

	less than 200 pounds ¹				200 to 700 pounds ²				700 pounds and over ³				Total	
	U.S.A.		All Countries		U.S.A.		All Countries		U.S.A.		All Countries			
	000hd.	\$000	000hd.	\$000	000hd.	\$000	000hd.	\$000	000hd.	\$000	000hd.	\$000		
5 Year Average	8.3	297	8.6	310	42.0	5,387	42.6	5,428	80.8	18,603	81.0	18,646	132.2	24,384
1950-54	12.3	293	12.5	301	138.8	14,022	139.2	14,051	110.1	19,760	110.3	19,795	262.0	34,147
1955-59	35.9	900	36.1	904	211.5	20,715	211.7	20,737	67.0	12,857	67.2	12,914	315.0	34,555
1960-64														
Annual														
1965	60.8	1,462	60.9	1,469	356.9	31,883	357.0	31,891	141.1	25,270	141.9	25,404	559.8	58,764
1966	105.8	3,024	106.0	3,035	282.2	29,819	282.3	29,831	94.5	18,192	94.8	18,256	483.1	51,122
1967	86.1	2,333	86.3	2,339	119.9	12,005	119.9	12,012	18.2	3,859	18.4	3,905	18,256	18,256
1968	137.4	3,901	137.6	3,910	112.6	12,770	112.7	12,800	58.9	14,006	59.3	14,102	309.6	30,812
1969	126.7	4,187	126.9	4,199	13.6	1,909	13.8	1,930	42.8	12,117	43.2	12,240	183.9	18,369
1970	127.0	5,752	127.1	5,759	6.8	989	7.0	1,022	24.0	7,547	24.5	7,700	158.6	14,481
1971	124.2	5,981	125.3	6,069	17.0	2,233	17.1	2,247	14.7	4,444	15.1	4,581	157.5	12,897
1972	127.9	8,125	144.4	9,777	58.7	9,671	60.6	9,985	18.8	6,640	19.6	6,843	224.6	26,605
1973 (to Sept.)	121.5	10,391	146.6	13,680	110.5	27,668	116.7	29,077	43.8	17,767	45.8	18,333	309.1	61,090

Source: Trade of Canada, Statistics Canada, Ottawa — ¹ Primarily Veal Calf² Primarily feeder cattle³ For slaughter and feeding

The recent increase in exports of feeder cattle reflects, in part, a very strong U.S. feedlot demand for replacements, and the recent rapid rate of increase in the size of the Western Canadian calf crop.² The outlet to the U.S. for Canadian feeder cattle sets the general level of feeder cattle prices in Canada. Thus, the U.S. demand for Canadian feeders establishes what might be referred to as a "floor price" for feeder cattle originating in Western Canada. The extent to which the price to Canadian ranchers rises above the "floor" depends on the competition between feedlot operators in Western and Eastern Canada.

Exports of Cattle 700 pounds and over are mainly to the U.S. and consist of heavy feeder cattle and low grade slaughter cattle for boneless beef purposes. Total exports in this class, like the 200-700 pound category, have dropped off sharply from the high levels achieved during the first part of the 1960's. Exports of live fed cattle for slaughter to the U.S. have not occurred to any significant level since the mid-1960's.

Imports of live cattle to Canada for beef and veal purposes are nearly all fed cattle from the U.S. for immediate slaughter. Over the years, imports of this category have varied sharply but commencing in 1970 rose to high levels (Table 4). Imports are mainly of the high good and choice U.S. grades. (For the year 1973, imports can be expected to total over 180,000 head because of a sharp fall increase in the importation of U.S. slaughter cattle).

The importation of live fed cattle from the U.S. is basically dependent on the relationship of fed cattle prices in Canada to fed cattle prices in the U.S. When fed beef slaughter in Canada falls short of domestic requirements, prices move up to a level where U.S. fed cattle may be imported. Nearly all the importation of live fed cattle has occurred in Eastern Canada.

Canada's export value of **purebred beef cattle** for breeding purposes has shown an appreciable increase since 1967 (Table 5). The largest outlet has been the U.S., with the U.S.S.R. and Japan accounting for small shipments. Canada's imports of purebred beef cattle have correspondingly moved upward since 1967. For 1972, the largest import source of beef breeding animals in terms of numbers and value was the U.S., but in terms of value France and Switzerland were also important, reflecting the importance of "exotic beef breeds" from Western Europe.

² From June 1, 1970 to June 1, 1973, the number of calves in Western Canada increased by 534,000 head or 22 percent, according to Statistics Canada.

CANADA: TOTAL EXPORTS AND IMPORTS OF LIVE ANIMALS FOR BEEF AND VEAL PURPOSES



FIGURE 3

TABLE 4. CANADA: IMPORTS OF LIVE CATTLE FROM THE U.S. (PRIMARILY FOR SLAUGHTER)

Years	No.	\$000	Years	No.	\$000
1960-64	8,403	1,737	1969	2,151	458
1965	1,626	269	1970	46,596	12,904
1966	6,115	1,689	1971	84,326	22,032
1967	27,562	7,743	1972	66,498	23,798
1968	2,005	545	1973 to Sept.	61,628	31,473

SOURCE: Trade of Canada, Statistics Canada

TABLE 5. CANADA: EXPORTS AND IMPORTS OF PUREBRED CATTLE FOR BEEF BREEDING PURPOSES, 1967 TO 1972 (All Countries)

Year	EXPORTS		IMPORTS	
	All Countries	All Countries	All Countries	All Countries
	No.	\$000	No.	\$000
1967	3,239	1,894	2,656	2,321
1968	5,007	3,064	3,231	2,804
1969	5,236	4,858	4,830	4,096
1970	7,607	6,240	4,614	3,781
1971	6,708	7,792	4,893	4,549
1972	7,976	8,373	5,169	5,103
1973 to Sept.	6,522	7,508	7,524	8,642

Source: Trade of Canada, Statistics Canada, Ottawa (Information available since 1967).

Imports of beef breeding cattle from Western European countries are restricted as they require permits and a period of quarantine. Cattle undergo tests and quarantine at one of the three maximum quarantine stations at Grosse Ile, Quebec, the island of St. Pierre or Edmonton, Alberta. The main purposes of importing these "exotic beef breeds" are to upgrade the quality of Canadian beef and to improve the efficiency of domestic beef production.

Trade in Beef and Veal, Fresh or Frozen

In the total beef import-export picture, one aspect of trade that has concerned domestic producers is the rapid growth in imports of beef and veal, fresh or frozen³. Beginning in 1969, imports of this category increased sharply and Canada became a net importer (Figure 4). Imports have increased from 21 million pounds in 1968 to 133.2 million pounds in 1972 (Table 6). The higher levels of domestic exports in 1970-71 reflect in part the substitution effect of frozen low grade beef imported from Australia and New Zealand releasing lower grades of fresh Canadian beef for export to the U.S.

Canada's dressed trade of fresh or frozen beef and veal has two distinct classes: (1) low grade beef for manu-

³ Nearly all of Canadian trade in this category is beef with only small amounts of veal.

CANADA: TOTAL EXPORTS AND IMPORTS OF BEEF AND VEAL FRESH OR FROZEN*

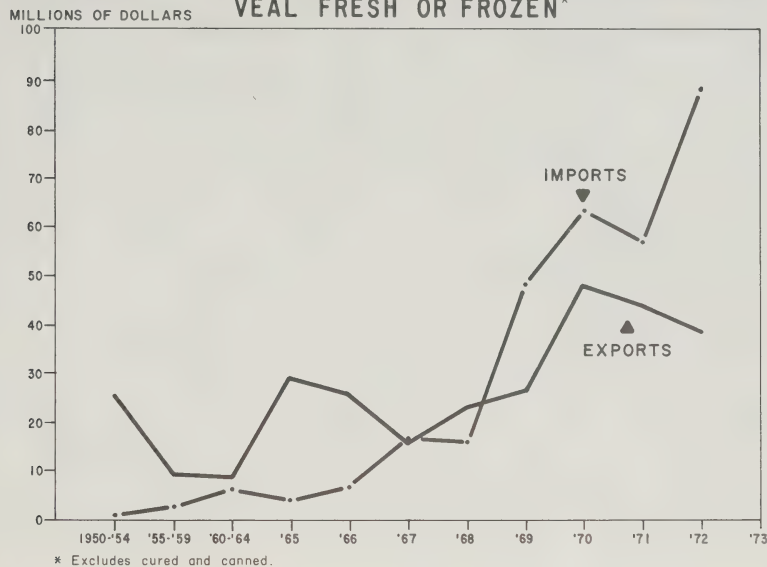


FIGURE 4

facturing purposes; and (2) high grade fed beef primarily from feedlots and commonly referred to as "table beef".

In 1972, Canada's exports of fresh or frozen beef and veal were nearly all to the U.S. (95 percent), and largely in boneless form. The importance of the U.S. outlet has not changed over the years. Exports are largely the

product of lower grades of cow slaughter and mainly originate in Quebec and Ontario. A small but consistent quantity of fresh or frozen beef is also exported to countries in the Caribbean region and Switzerland.

In 1972, Canada's imports of fresh or frozen beef and veal were the largest in terms of value from Australia (40

TABLE 6. CANADA: IMPORTS AND EXPORTS OF DRESSED BEEF AND VEAL, FRESH OR FROZEN, 1950 TO 1973

	Imports to Canada								Exports from Canada				Canada's Trade Balance	
	Australia		New Zealand		U.S.A.		All Countries		U.S.A.		All Countries			
	Mil. lb.	\$000	Mil. lb.	\$000	Mil. lb.	\$000	Mil. lb.	\$000	Mil. lb.	\$000	Mil. lb.	\$000	Mil. lb.	\$000
1950-54	.03	5	.4	61	.8	375	1.7	604	40.3	18,344	57.7	25,862	+66.0	+25,258
1955-59	1.4	467	4.5	1,131	4.3	1,807	10.6	3,512	28.5	9,498	29.1	9,825	+18.5	+ 6,313
1960-64	6.0	2,143	8.4	2,580	4.4	2,794	19.0	7,583	22.5	8,465	23.5	9,025	+ 4.5	+ 1,442
1965	2.8	1,444	2.0	836	2.5	2,558	7.3	4,844	71.9	25,739	78.8	29,441	+71.5	+24,597
1966	4.0	2,125	2.8	1,219	4.4	4,489	11.2	7,843	56.4	24,277	59.2	26,350	+48.0	+18,507
1967	9.3	5,391	5.5	2,761	7.3	6,849	22.4	15,177	27.4	12,702	29.6	14,377	+ 7.2	- 800
1968	10.9	6,255	6.4	3,185	3.6	4,917	21.0	14,408	47.5	21,870	50.0	23,735	+29.0	+ 9,327
1969	29.4	13,307	74.8	29,775	4.4	5,786	108.6	48,866	45.9	24,909	47.4	26,371	-61.2	-22,495
1970	55.2	25,786	73.4	31,067	5.8	7,038	134.4	63,891	83.5	46,795	85.2	48,465	-49.2	-15,426
1971	24.8	13,499	61.2	28,246	17.5	16,223	103.5	57,967	80.4	44,960	82.6	46,984	-20.9	-10,983
1972	58.4	35,516	47.8	27,004	27.0	26,276	133.2	88,796	58.7	37,471	60.6	39,421	-72.6	-49,375
1973														
(to Sept.)	43.1	33,193	38.7	29,240	24.2	28,033	106.0	90,467	48.6	44,539	51.5	47,965	-54.5	-42,502

Source: Statistics Canada, Trade of Canada.



percent), followed by New Zealand (30.4 percent), with the U.S. (29.6 percent) a close third. Imports from the Oceanic countries are largely low grade beef in boneless form for manufacturing purposes. This beef is similar to Canada's cow beef, in particular the "manufacturing grade", and is used mainly for hamburger, luncheon meats, and other processed meat products. While some of the beef imported from the U.S. is also for manufacturing purposes, a rising volume of high priced finished cuts, largely from heavy carcasses, has been moving directly into the hotel and restaurant trade, especially in Eastern Canada. These imports occurred in concert with increased imports of live fed cattle from the U.S. for immediate slaughter.

Reasons behind the recent rise in Canadian imports of beef are complex in nature. The relatively favourable price for beef in Canada in recent years along with the rapid increase in demand for both fresh and processed beef have increased imports of beef. Another major factor is the rise in beef production of major exporting countries such as Australia and New Zealand, and agreements to diversify their export outlets. However, the rise in beef imports is closely related to the class of beef imported and characteristics of domestic beef production.

In recent years, the level of cow slaughter in Canada has trended downward, in particular the slaughter of lower

grade cows mainly of dairy breeding. These cows largely constitute the "manufacturing grade", the main source of domestic boneless beef for processing⁴. There is also an increasingly affluent Canadian hotel and restaurant outlet for high quality finished beef cuts which underlies the rise in U.S. beef imports.

Trade in Cured Beef

Canada is a net importer of cured beef with a trade deficit of \$4.2 million in 1972 (Table 7). While trade in cured beef is not large, the value of both exports and imports have increased steadily since the early 1950's.

Canada's exports of cured beef, largely briskets, plates and flanks, are mainly to countries located in the Caribbean region. The main outlets are Jamaica, Guyana and Trinidad. A very small quantity moves to the U.S. Canada's imports of cured beef have been primarily from the U.S. These imports have entered Canada mainly in the form of salted beef in barrels to Newfoundland, and heavy briskets and plates used in the manufacturing of smoked meat for which Eastern Canada is the major outlet.

⁴ During 1965-68, federally inspected slaughter of the "manufacturing grade" averaged 362,240 head yearly and in 1969-72 it averaged 278,360 head yearly.

TABLE 7. CANADA: EXPORTS AND IMPORTS OF CURED BEEF, 1950 TO 1973

	EXPORTS			IMPORTS			CANADA'S BALANCE
	U.S.A.	All Countries		U.S.A.	All Countries		All Countries
	\$000	Mil. lb.	\$000	\$000	Mil. lb.	\$000	\$000
1951-54	2	0.5	106	2,277	10.1	2,277	-2,171
1955-59	2	1.0	232	2,651	11.9	2,651	-2,419
1960-64	17	1.9	442	3,908	12.3	3,908	-3,466
1965	23	3.9	939	4,005	9.9	4,005	-3,065
1966	34	3.0	912	5,169	12.5	5,169	-4,257
1967	5	2.4	608	5,929	15.3	5,929	-5,321
1968	—	3.8	967	5,558	12.9	5,558	-4,591
1969	2	3.4	1,006	4,842	9.8	4,842	-3,836
1970	8	5.0	1,388	4,434	9.6	4,434	-3,046
1971	2	4.4	1,130	5,733	12.2	5,734	-4,604
1972	60	7.1	2,264	6,415	11.3	6,415	-4,151
1973 (to Sept.)	27	4.1	1,792	3,635	5.3	3,635	-1,843

Source: Trade of Canada, Statistics Canada, Ottawa.

Trade in Canned Beef

Canada is a consistent net importer of canned beef with imports totaling \$8.1 million in 1972 (Table 8). In fact, no exports of this category from Canada are recorded separately by Statistics Canada. Canned beef imports are mostly "canned corned beef" of which Brazil, Argentina, Australia and Paraguay have been the exclusive suppliers since 1970. These South American countries can only export beef to Canada in the processed form due to domestic health regulations and the presence of animal diseases in South America.

Imports of canned corned beef reflect the fact that Canadian slaughter cattle generally have a higher fat content compared with the fat levels of grass fed cattle in countries exporting this product. The import situation is also related to the fact that Canadian cattle are largely grain fed and increasingly of beef breeding strains. Moreover, the alternative outlet in Canada for fresh beef products makes the opportunity cost too high for canning purposes.

Imports of canned beef and veal are not large and have remained somewhat stationary in recent years. The major sources have been the U.K. and Italy. In 1972, of the 1,786,000 pounds imported, the U.K. supplied 1,300,000 pounds and Italy supplied 349,000 pounds,

Trade in Cattle and Calf Hides

In the total export-import trade of raw cattle hides, raw calf hides and kip skins, and upper leather cattle, calf and whole kip, Canada is a strong and consistent net exporter (Figure 5).

Canada's exports of raw cattle hides have increased sharply since the early 1950's (Table 9). In trade with all countries, Canada has been a steady net exporter of raw cattle hides, with a trade surplus in 1972 of \$18.8 million. Conversely, Canada is a large net importer of cattle hides from the U.S. This trade difference has widened in recent years. In fact, the U.S. is virtually the lone supplier of imported raw cattle hides.

Canada's exports of this category move to several countries throughout the world. In 1972, the U.S., followed by Poland, West Germany, Japan, and the Netherlands were the leading outlets. The peak year for domestic exports in terms of volume was 1966 and in terms of value it was 1972. Fostered by a world-wide demand for leather and no increase in cattle slaughter, Canada's exported cattle hide price per skin increased from \$7.54 in 1971 to \$15 in 1972. To the end of September 1973 exports of cattle hides remain at high levels.

In trade with all countries, Canada is a net exporter of raw calf hides and kip skins (Table 10). Exports and imports in both total volume and total value have been downward since the mid-1960's. This trend reflects a relatively lower level of calf slaughter in many countries due to increased beef production, and also a reduction in dairy cow numbers. The trend in Canada parallels the trend in many countries of the world.

Canada exports calf skins to several countries throughout the world with the U.S., Italy, and the USSR the leading outlets in 1972. Canada's imports of this category are mainly from the U.S., with much smaller imports from France and Italy. In 1972, the average export price increased to \$4.95 per skin from \$3.10 in

TABLE 8. CANADA: IMPORTS (NO EXPORTS)¹ OF CANNED CORNED BEEF, CANNED BEEF, AND TOTAL CANNED 1950 TO 1973

Year	Canned Corn Beef		Canned Beef & Veal		Total Canned	
	000 lb.	\$000	000 lb.	\$000	000 lb.	\$000
1950-54	— not separated —				12,305.1	3,778
1956-59					14,189.8	4,410
1960-64	9,672.6	3,808	985.3	332	10,657.9	4,140
1965	9,251.7	3,857	619.0	224	9,870.7	4,081
1966	9,067.8	3,933	609.7	222	9,677.5	4,155
1967	11,698.4	4,967	1,089.6	445	12,788.0	5,412
1968	8,703.9	3,750	1,203.8	536	9,907.7	4,286
1969	13,477.2	5,866	1,819.7	855	15,296.9	6,721
1970	11,303.5	5,111	2,008.2	869	13,311.7	5,980
1971	8,078.2	4,776	1,595.1	894	9,673.3	5,670
1972	11,524.9	7,251	1,786.5	855	13,311.4	8,106
1973 (to Sept.)	6,234.6	4,089	1,015.3	684	7,249.9	4,773

Source: Trade of Canada, Statistics Canada.

¹No exports of canned beef or veal from Canada is reported by Statistics Canada.

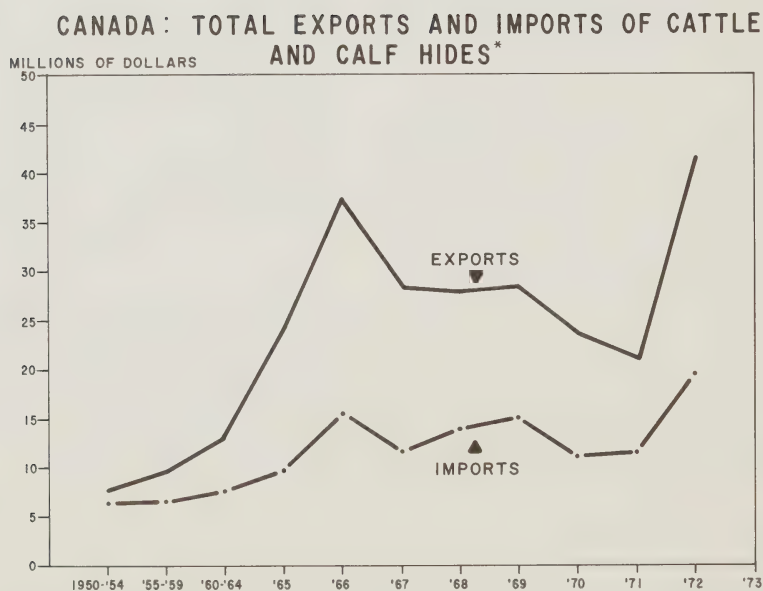


FIGURE 5

TABLE 9. CANADA: EXPORTS AND IMPORTS OF RAW CATTLE HIDES 1950 TO 1973

	EXPORTS			IMPORTS			CANADA'S BALANCE
	U.S.A.	All Countries		U.S.A.	All Countries		All Countries
	\$000	No. 000	\$000	\$000	No. 000	\$000	\$000
1950-54	2,763	477.3	5,115	3,910	446.1	4,610	+ 505
1955-59	1,551	845.3	6,229	3,795	600.8	3,844	+ 2,385
1960-64	1,665	1,185.5	9,584	5,105	725.6	5,191	+ 4,393
1965	2,278	1,950.9	15,255	5,491	787.0	5,491	+ 9,764
1966	1,470	2,510.9	27,407	10,303	984.4	10,309	+17,098
1967	1,482	2,314.5	19,012	7,418	943.2	7,420	+11,592
1968	3,107	2,344.1	16,133	8,506	1,194.6	8,549	+ 7,584
1969	1,973	2,063.1	18,627	10,260	1,167.8	10,331	+ 8,296
1970	2,919	1,910.1	16,113	8,425	1,089.9	8,460	+ 7,653
1971	1,861	1,864.5	14,053	9,116	1,125.4	9,120	+ 4,933
1972	5,316	2,287.2	34,379	15,528	1,092.5	15,533	+18,846
1973 (to Sept.)	9,686	1,716.3	38,049	13,001	673.8	13,002	+25,047

SOURCE: Trade of Canada, Statistics Canada.

1971. Improved world demand from tanners and producers of leather goods together with a marked decline in world calf slaughter underlies the price increase.

Canada is also a net exporter of the categories **upper leather cattle** and **upper leather calf and whole kip**. The U.S. is the major export outlet and import source.

UPPER LEATHER, CATTLE, CALF AND WHOLE KIP (Combined)

	Exports From Canada		Imports To Canada	
	U.S.	All Countries	U.S.	All Countries
	\$000			
1970	4,081	5,620	229	1,416
1971	3,783	4,758	423	1,386
1972	3,435	4,287	742	2,202
1973 (to Sept.)	1,900	3,681	657	1,755

SOURCE: Statistics Canada.

Trade in Tallow

In trade with all countries, Canada has been a large net exporter of tallow since the early 1950's (Figure 6). The dollar value of tallow exports increased sharply through the 1950's, reaching a peak in 1965. From 1965 to 1969, the total export values trended downwards, largely due to a drop in world tallow prices. In 1972, Canada's tallow exports totaled \$15.9 million and imports were \$1.5 million, for a trade surplus of \$14.4 million (Table 11).

The recent rise in tallow prices partially reflects an improved world demand and only marginal increases in

world cattle slaughter. In addition, in many world countries tallow is being substituted for oils in soap manufacturing, and its use in animal feeds continues to grow.

Miscellaneous trade in Meat and By-Products

There are several categories of trade reported by Statistics Canada where beef and veal products are not separated out but encompassed along with other animal products (Table 12).

The largest miscellaneous trade category is "Fancy Meats and Edible Offals" of which Canada is a large net exporter to the U.K. and the U.S. with small movements to West Germany and the Caribbean countries. The U.S. followed by Oceanic countries are basically the main sources. Canada is also a large net exporter of the classification "Animal material used in the Manufacturing of Drugs", with the U.S. outlet accounting for nearly all of the exports.

Canada's **sausage exports** are expanding. Nearly all of the exports move in the form of "cured and frozen" with small movements of fresh and canned. The main export outlet for sausages is the U.S., followed by the Caribbean countries (including Bermuda). A small quantity of cured sausages are imported from the U.S. Also, a small quantity of canned sausages are imported, but are encompassed with the classification **meat preparations canned**.

Canada is a major exporter and importer of **sausage and meat casings**. About half of Canada's exports of casings move to the U.S. with the balance to several countries throughout the world. Beef and hog casings along with a

TABLE 10. CANADA: EXPORTS AND IMPORTS OF RAW CALF AND KIP SKINS, 1950 TO 1973

	EXPORTS			IMPORTS			CANADA'S BALANCE
	U.S.A.	All Countries		U.S.A.	All Countries		All Countries
	\$000	No. 000	\$000	\$000	No. 000	\$000	\$000
1950-54	2,160	571.9	2,654	1,127	369.8	1,598	+1,056
1955-59	1,559	908.9	3,679	2,517	725.9	2,809	+ 870
1960-64	1,402	791.3	3,553	1,887	403.4	2,510	+1,043
1965	1,728	952.1	4,620	1,386	330.6	2,223	+2,397
1966	1,216	714.7	4,381	2,993	489.8	3,622	+ 759
1967	1,658	820.7	4,086	1,764	496.0	2,608	+1,478
1968	2,004	823.5	4,267	2,335	471.8	2,928	+1,339
1969	2,398	729.0	4,541	2,326	427.5	2,835	+1,706
1970	909	567.4	2,244	631	234.9	1,225	+1,019
1971	538	799.9	2,485	897	409.6	1,166	+1,319
1972	1,138	627.0	3,105	1,299	292.6	1,795	+1,310
1973 (to Sept.)	1,375	395.5	2,667	709	141.0	1,296	+1,371

Source: Trade of Canada, Statistics Canada, Ottawa.

TABLE 11. CANADA: EXPORTS AND IMPORTS OF TALLOW, 1950 TO 1973

	EXPORTS			IMPORTS			CANADA'S BALANCE
	U.S.A.	All Countries		U.S.A.	All Countries		All Countries
	\$000	Mil lb.	\$000	\$000	Mil. lb.	\$000	\$000
1950-54	110	15.3	1,040	417	4.1	417	+ 623
1955-59	293	58.3	4,487	57	0.7	57	+ 4,430
1960-64	70	106.7	7,397	458	5.0	467	+ 6,930
1965	19	135.6	12,512	915	8.0	915	+11,597
1966	79	136.3	11,846	802	7.0	802	+11,044
1967	149	145.8	9,589	632	7.1	632	+ 8,957
1968	373	165.9	9,178	1,123	17.3	1,123	+ 8,055
1969	745	150.9	9,923	1,681	19.6	1,681	+ 8,242
1970	1,056	179.3	15,307	2,073	21.8	2,073	+13,234
1971	1,658	218.9	18,733	1,880	21.0	1,880	+16,853
1972	1,306	229.6	15,855	1,491	18.5	1,491	+14,364
1973 (to Sept.)	2,897	142.2	15,465	715	4.6	715	+14,750

Source: Trade of Canada, Statistics Canada, Ottawa.

small quantity of sheep and lamb casings are exported. Imports of casings are largely from New Zealand followed by the U.S. and Australia. Imports are mainly sheep and lamb casings, but hog casings are also imported from the U.S.

Canada's imports of **extracts of meat not canned** is largely beef from Australia and South American countries.

Canada's exports of **animal semen**, mainly for beef breeding, is a relatively new export component. The U.S. is the largest outlet accounting for \$3.3 million of the \$4.5 million exported in 1972. Much smaller quantities are exported to several other countries throughout the world.

SUMMARY AND CONCLUSIONS

In summary, Canada's exports of live calves (200 pounds or less) gradually increased in recent years. Notwithstanding the strong U.S. and world demand for veal calves, it is doubtful whether increasing levels of exports will occur from Canada in future years. Dairy cow numbers, the basic source of veal calves for export, have been declining. Furthermore, there is a readily accepted demand for high quality veal in Canada, especially in large population centers. Also, there is a strong feedlot demand for dairy steer calves in Eastern Canada.

Canada's exports of feeder cattle (200-700 pounds) which mainly go to the U.S. dropped substantially from the mid-1960's to 1970, and then showed a sizeable

CANADA: TOTAL EXPORTS AND IMPORTS OF TALLOW

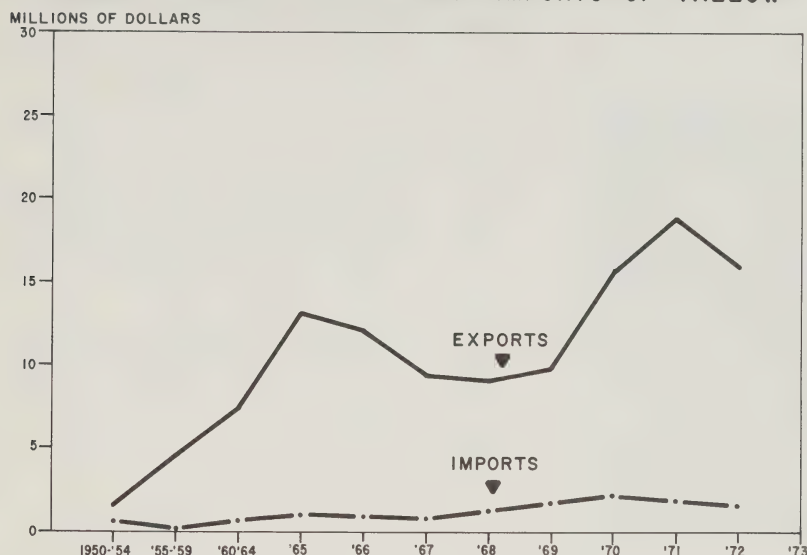


FIGURE 6

increase commencing in the fall of 1972. In future years, Canada's exports of feeder cattle will reflect the per capita demand for beef in Canada relative to the U.S., the rate of expansion in beef cow numbers in Canada, and in particular the supplies and prices of feed ingredients for feedlot finishing. These factors, coupled with the availability and costs of immediate working capital, will underlie the future growth and development of feedlot finishing in Canada, and trade in finished beef, live and dressed.

It may be reasonable to expect continued high import levels of manufacturing beef, including canned beef. Progressively more of Canada's beef production will consist of higher quality fed beef intended for the much higher priced fresh market. Also, the changing composition of Canada's cattle population from dairy breeding to more beef breeding strains is another factor favouring this trend. It is evident that Canada's export market of manufacturing beef to the U.S. differs substantially from Canada import sources which are primarily Australia and New Zealand. This pattern of beef trade can be expected to continue during the next few years.

Canada both exports and imports hides and skins, but in balance Canada is a strong net exporter. Future requirements of style, the extent to which synthetics make

inroads into the industry, and trends in domestic and world cattle slaughter will be significant factors in determining Canada's future in this category of trade.

Canada is also a large net exporter of tallow. Similar to cattle hides, domestic and world cattle slaughter, substitutes, and synthetic materials will have a major bearing on Canada's future tallow trade.

In recent years, the demand side of Canada's supply - demand equation for beef has experienced dramatic changes.

The recent deterioration of Canada's trade balance in beef and veal resulted largely from the marked increase in imports, principally low grade beef for manufacturing purposes, high quality beef cuts for the hotel and restaurant trade, and live fed animals for immediate slaughter.

In short, beef imports have risen because of increased consumer demand for beef even though domestic beef output has been easing upwards to record levels. For example, from the 1965-69 annual average to 1972, domestic beef production in pounds increased 7 percent while total domestic beef consumption rose 16 percent, reflecting an increase in per capita consumption from

TABLE 12. CANADA: MISCELLANEOUS MEAT AND BY-PRODUCT TRADE WITH ALL COUNTRIES

Item		1965-68	1969	1970	1971	1972	1973 (to Sept.)
		— millions of \$ —					
Fancy Meat and Edible Offal	Export	8.6	7.7	11.4	8.4	11.5	15.0
	Import	1.2	2.3	2.5	2.5	3.8	3.8
Animal Material for Mfrg. Drugs	Export	7.4	8.5	8.6	5.5	5.3	5.0
	Import	1.0	.6	.4	.3	.2	.3
Sausage ¹	Export	2.1	2.5	2.9	3.2	3.8	3.9
	Import	.3	.3	.3	.2	.2	.1
Meat Preparation, Canned	Export	.7	.3	.5	.4	1.3	.6
	Import	3.2	3.1	2.4	1.9	2.4	1.2
Meat Preparation, not canned	Export	.2	.3	.5	.8	.8	.9
	Import	1.5	2.8	2.4	1.8	1.9	2.1
Sausage and ² Meat Casings	Export	7.1	8.5	9.1	8.7	8.3	8.1
	Import	9.0	9.2	10.5	9.7	10.5	8.5
Meat Waste and Tankage	Export	.8	.4	.8	.8	.8	.9
	Import	.1	1.5	2.9	2.2	2.5	4.2
Extract of Meat ³	Import	.5	.5	.5	.8	1.3	1.3
Animal Semen ⁴	Export		n.a.		4.4	4.5	6.7
Glove and Garment Leather	Export	1.1	1.2	1.0	1.2	1.2	3.5
	Import	1.9	2.4	6.4	9.9	15.6	12.7

SOURCE: Trade of Canada, Statistics Canada

¹ Exports include fresh, frozen (cured) and canned.
Imports include cured only² Includes synthetic materials.³ No exports reported.⁴ Available since 1971, no imports reported.

85.1 pounds in 1965-69 to 92.5 pounds in 1972.⁵ This upward trend in per capita consumption of beef is expected to continue as Canadians' love affair with beef grows stronger.

To maintain a rising level of beef consumption in Canada, an increasing supply of high quality fed beef, as well as beef for processing is needed. Any limitations on beef imports should be considered against the possible consequences of either reducing per capita beef consumption or shifting consumers' preferences towards possible beef substitute products. Also, it should be recognized that as beef production fluctuates cyclically⁶, beef imports tend to fill the gap, and assist in

maintaining per capita consumption while domestic producers are withholding animals for herd expansion. Furthermore, international trade in beef and veal is not only a safety valve, but also an important stabilizing effect on the beef industry. For example, while beef for manufacturing purposes in Canada was in relatively tight supply, hides, tallow and offals during the same time were in a surplus position.

In balance, the recent growth in Canada's imports of beef and veal can be attributed to rising domestic demand for beef, and the slower recent growth of beef output. While the latter reflects the buildup in Canada's cattle inventory numbers, the former reflects the fact that different types and qualities of beef carcasses are required to satisfy the need of today's beef consumers. This suggests that the growing market for beef in Canada is also a highly stratified market.

⁵ Statistics Canada, Catalogue 32-220, April 1973.⁶ Determinants of change in Canadian Beef Cattle Slaughter, A.M. Boswell, Canadian Farm Economics, February 1973, Vol. 8, No. 1.

GROWTH, STABILITY AND EFFICIENCY OF HOG PRODUCTION IN THE PRAIRIE PROVINCES

Hog production in the Prairies increased rapidly in the 1969-71 period. The data presented in this study suggest that at least part of this increase represents permanent growth in production rather than a temporary increase in production.

In general, the survey data indicate that farmers with large hog enterprises are more efficient than those with small enterprises.



Roger K. Eyvindson*

INTRODUCTION

Four related issues of importance to agriculture in Western Canada are growth of the livestock sector, stability of production, diversification out of cash grain production, and efficiency of livestock production. In this article, data collected in a survey of hog producers are used to examine these issues as they relate to hog production.

SOURCE OF DATA

The data presented in this article are a small part of the data collected for a study of hog production in the three Prairie provinces. These data were collected for eleven classifications of hog enterprises in each of five regions of the Prairies (see Table 1 and Figure 1). In order to obtain accurate results for the individual enterprise classifications in each region, it was necessary that each enterprise classification in each region be adequately represented in the sample. To meet this requirement, the objective was to interview about 10 producers in each enterprise classification in each region. In most cases this objective was met, but in some regions it was not possible to obtain the names of a sufficient number of

producers for some of the enterprise classifications. In total 511 hog producers were interviewed.

With the sampling procedure used, precise estimates of the averages for combined enterprise groups (e.g., all producers in a region) could be obtained by weighting the estimate for each enterprise group by the number of producers in the total population that are in that group. Data on total numbers of producers in each group were not available so that the averages for combined groups presented in this report were estimated by averaging the values reported by the farmers interviewed who were in the combined group.

GROWTH AND STABILITY OF HOG PRODUCTION

In an effort to reduce the reliance of agriculture on grain markets and to increase the value of agricultural production, efforts have been made to increase production of and markets for livestock in Western Canada. At the same time concern has been expressed about the wide fluctuations in production levels of hogs both because of the immediate effect on individual farmers and because of the difficulty in maintaining markets without a stable level of supply.

Increases in hog production either at the individual farm level or at a more aggregate level may be indicative of either permanent growth or a temporary upward change

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TABLE 1. HOG ENTERPRISE ON FARMS IN ALL REGIONS: AVERAGE NUMBER OF SOWS REPORTED PER FARM, AVERAGE NUMBER OF MARKET HOGS AND FEEDER PIGS SOLD PER FARM AND AVERAGE NUMBER OF FEEDER PIGS PURCHASED PER FARM IN THE YEARS 1968-1970.

Type of Major Hog Enterprise*	Size of Major Hog Enterprise	No. of Sows Per Farm, Dec. 31			Market Hogs Sold Per Farm			Feeder Hogs Sold Per Farm			Feeder Pigs Purchased Per Farm		
		1968	1969	1970	1968	1969	1970	1968	1969	1970	1968	1969	1970
(No. of sows)													
Farrow to Finish	3- 7	3	4	4	27	30	34	1	1	2	6	3	1
	8-17	8	11	11	69	79	112	5	8	5	8	18	9
	18-32	17	23	25	159	194	250	19	20	20	16	32	27
	33-62	28	40	47	227	288	336	16	67	44	18	15	23
	63 or more	72	83	106	804	909	1,129	82	64	23	38	73	102
	All sizes	18	23	27	169	200	249	15	24	16	14	21	21
Weanling Pig	3-17	6	8	8	10	12	9	41	44	74	1	—	—
	18-32	16	23	21	10	9	17	146	175	242	—	—	—
	33 or more	43	55	68	36	35	25	415	516	653	3	1	1
	All sizes	24	32	38	22	22	18	230	281	367	2	—	1
(No. of hogs)													
Hog Finishing	18-122	1	0	1	37	44	62	1	1	1	30	53	60
	123-272	2	2	1	88	116	171	—	—	3	77	123	197
	273 or more	3	4	2	403	459	647	—	—	—	368	458	714
	All sizes	2	2	2	228	263	372	—	—	1	207	267	408
All farms surveyed		16	21	24	140	163	211	74	93	114	55	72	105

*The classification of enterprises on farms with mixed hog enterprises (e.g., farms that sell both weanlings and finished hogs) was based on the number of hogs of each category sold or purchased.

to be followed by a later reduction. Production level changes can be positively identified as growth or temporary changes only if data are available for a sufficiently long time period to show whether or not the change is permanent.

The data collected in the survey show production level changes by size and type of hog enterprise for the period 1968-70 (Table 1). Although this period is not sufficiently long to positively identify the changes that have occurred as either growth or temporary increases, some comments can be made about the likelihood of these changes being permanent.

First, although average production levels increased for all types and sizes of hog enterprises, in absolute terms and, in many cases, in percentage terms this increase has been faster for the farms that had fairly large enterprises in 1968 than for those that had smaller enterprises in that year. For example, the size groups within the three enterprise classifications that reported the largest percentage increases in the 1968-70 period were: (1) the 33-62 sow farrow to finish group (a 68% increase in sow numbers); (2) the 33 or more sow weanling pig group (a 58% increase in sow numbers); and (3) the 123-272 hog finishing group (a 156% increase in the number of pigs

purchased). Since changes of this magnitude by farmers with fairly large hog enterprises typically imply the investment of substantial amounts in buildings and equipment (this is especially true of those with large farrowing operations), it can be expected that a substantial share of the total production increase reported represents permanent growth rather than a temporary increase.

The suggestion that a substantial proportion of the increased production reported by the farmers surveyed represents permanent growth is supported by aggregate production data for Western Canada in the period 1968 to 1972 (Table 2). That is, it could be expected that the increase in production in the 1969-71 period would, given the very low prices in 1971, be followed by a substantial decline in production in 1972. In fact the decrease in production in 1972 was small relative to the increase in the 1969-71 period.¹

The increase in size of hog finishing enterprises was, on a percentage basis, much larger than the increase in the

¹For a more complete discussion of aggregate levels of hog production in Canada see D.A. West and H.W. Smith, "Instability in the Hog-Pork Industry", Canadian Farm Economics, April, 1973.

OUTLINE MAP OF THE PRAIRIE PROVINCES SHOWING HOG STUDY REGION BOUNDARIES

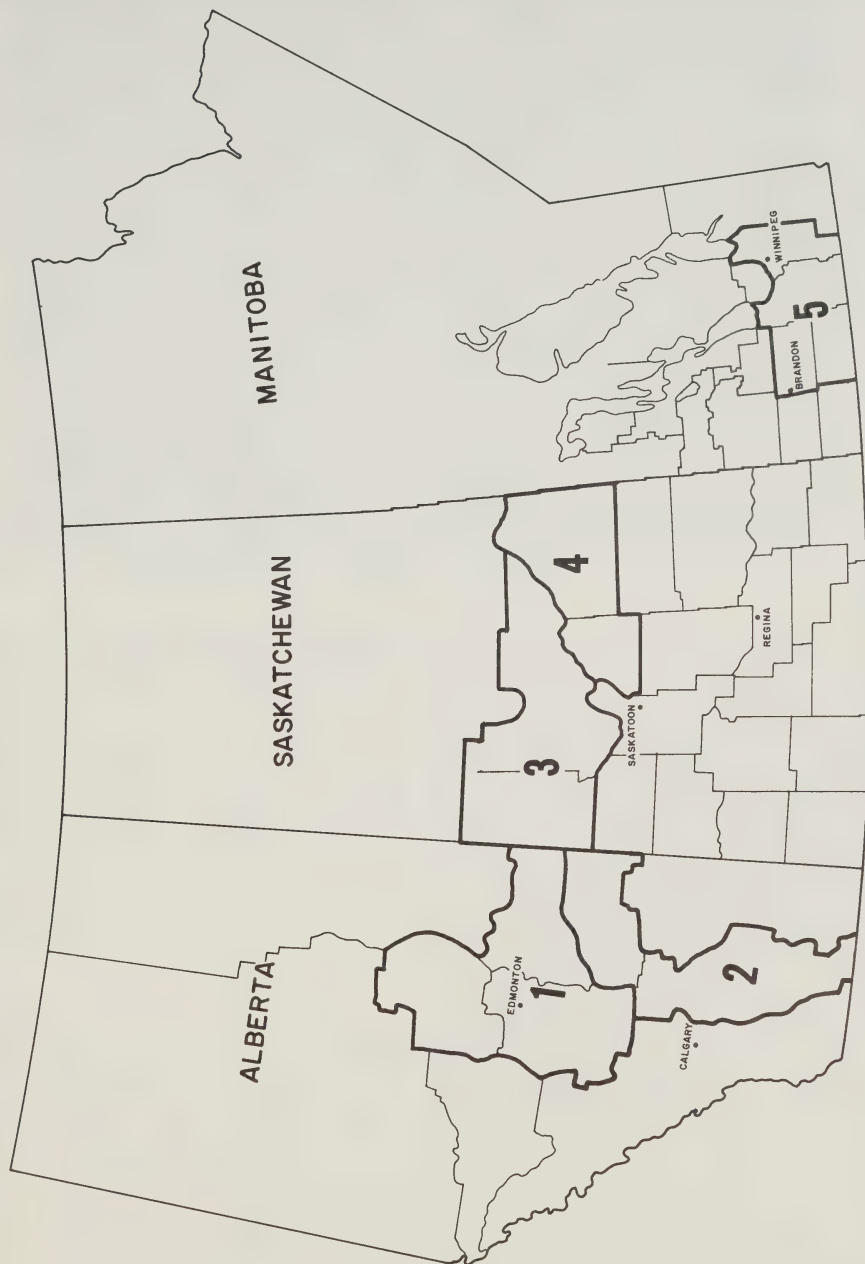


FIGURE 1

size of the other two enterprise types. During the 1968-70 period the average number of feeder pigs purchased by the producers with hog finishing enterprises increased by nearly 100 percent. Rapid production level increases are easier with this type of enterprise because the facilities required are somewhat simpler than are necessary for those enterprises which involve sow farrowings. However, since the investment in building and equipment is smaller for finishing enterprises than for the other types of enterprises, it seems probable that production decreases will be more likely and more rapid in periods when price conditions are not favourable to hog production. Thus, the production level increases reported by farmers with hog finishing enterprises may be less permanent than those reported by farmers with farrow to finish and weanling enterprises.

TABLE 2. HOG MARKETINGS IN THE THREE PRAIRIE PROVINCES, 1968-72

	Total Hog Marketings Prairie Provinces (number)
1968	3,049,784
1969	2,747,016
1970	3,612,818
1971	4,644,753
1972	4,238,522

It should also be noted that, in the aggregate, the number of pigs purchased for hog finishing enterprises cannot exceed the number sold by those with farrowing operations. On a per farm basis the data collected indicate that the percentage increase in feeder pig purchases is larger than the percentage increase in feeder pig sales. (The smallest percentage increase in pigs purchased by finishing enterprise groups — 94% for the largest enterprise size — is greater than the largest percentage increase in pig sales by weanling enterprise groups — 80% for the smallest enterprise size.) There are two possible explanations for this discrepancy although definite proof of their validity is available. First, the number of weanling pig enterprises in the population may exceed the number of hog finishing enterprises. (The survey was not designed to duplicate the population distribution of enterprise classifications.) The second explanation follows from the suggestion made in the last paragraph that changes in production levels are likely to be quite rapid for hog finishing enterprises. If this is the case, then there could be a number of farmers who had hog finishing enterprises in 1968 or 1969 but who were out of production in 1970 and, therefore, not eligible for the survey. The exclusion of these farms would lead to the overestimation of the average increase in feeder pig purchases.

It has been suggested that much of the instability in hog production is caused by "inners and outers", producers who go into hog production when prices are favourable and out of production when prices are unfavourable. One measure of the significance of "inners and outers" is provided by comparing the average years since hog production was started with the average number of years hogs have been produced (Table 3). A significant difference between these two figures would indicate that a substantial number of the farmers in the group had been out of hog production at least once in the period since they first started hog production and thus would be classified as "inners and outers". The only groups for which there is any real difference between years of production and years since production began are the smallest farrow to finish group (a difference of two years) and the smallest hog finishing group (a difference of three years). Although the data do not strongly support the idea that there are a lot of "inners and outers" in the hog industry, the data do not definitely disprove the hypothesis if the definition of "inners and outers" includes farmers who have only been in production once for a short time. With this definition there could be many farmers who had at one time produced hogs for a short time, but who were out of production in 1970 and not eligible for the survey.

TABLE 3. NUMBER OF YEARS SINCE HOG PRODUCTION WAS FIRST STARTED AND NUMBER OF YEARS HOGS HAVE BEEN PRODUCED ON FARMS IN ALL REGIONS.

Type of Major Hog Enterprise	Size of Major Hog Enterprise	Ave. No. of Years Since Hog Production Was First Started	Ave. No. of Years Hogs Have Been Produced
(No. of sows)			
Farrow to Finish	3- 7	25	23
	8-17	22	21
	18-32	15	14
	33-62	14	13
	63 or more	12	12
	All sizes	19	18
Weanling Pig	3-17	16	16
	18-32	12	12
	33 or more	13	12
	All sizes	14	13
(No. of hogs)			
Hog Finishing	18-122	18	15
	123-272	16	16
	273 or more	15	14
	All sizes	16	15
All farms surveyed		17	16



Variable grain markets have frequently been cited as a cause of instability of livestock production in Western Canada. It is suggested that poor grain markets induce cash grain farmers to begin hog production or some other type of livestock production and that many of these farmers go out of livestock production when grain markets improve. In order to obtain some idea of how important this factor is, the farmers surveyed who started producing hogs in the 1967-70 period (a period during which grain surpluses were building up) were asked how much their decision to begin hog production was influenced by the fact that not all grain they produced could be sold (Table 4).

Of the farmers interviewed who started hog production in the 1967-70 period, 55 percent said their decision was either not influenced or only slightly influenced by poor grain markets while 45 percent said that poor grain markets were either a major factor influencing their decision or a considerable influence on their decision. The influence of poor grain markets does not seem to be strongly correlated with size of hog enterprises, but there are substantial differences between the responses of the farmers in different enterprise groups. Poor grain markets were either a major influence or a considerable influence on the decision to begin hog production for 40 percent of the farmers in the farrow to finish group

while 27 percent of the weanling pig group and 67 percent of the hog finishing group were similarly influenced.

The data presented in Table 4 support the suggestion made earlier that hog production levels on farms with finishing enterprises tend to be less stable than those on farms with farrow to finish or weanling pig enterprises. First, the percentage of producers who began hog production in the 1967-70 period was larger for those with finishing enterprises than for those with the other two types of enterprise (30% of those with finishing enterprises started production in 1967-70 versus 20% of these with weanling enterprises and 18% of those with farrow to finish enterprises). Second, the proportion of the producers beginning hog enterprises in 1967-70 who reported poor grain markets as a major or considerable influence on their decision was higher for those beginning finishing operations than for those beginning other types of hog operations. (Farmers who begin hog enterprises principally because of poor grain markets will likely seriously consider dropping these enterprises when grain markets improve). It should be pointed out, however, that even though production levels on individual finishing operations are quite unstable this would have little effect on the stability of aggregate production levels. Stability of aggregate production levels is tied to stability in the breeding herd.

TABLE 4. INFLUENCE OF THE FACT THAT NOT ALL GRAIN PRODUCED COULD BE SOLD ON THE DECISION TO BEGIN HOG PRODUCTION BY THOSE PRODUCERS IN ALL REGIONS WHO STARTED HOG PRODUCTION IN THE 1967-70 PERIOD.

PRODUCTION IN THE 1967-70 PERIOD			% of Farmers Beginning Production in 1967-70 Whose Decision Was Influenced by the Fact That All Grain Produced Could Not Be Sold			
Type of Major Hog Enterprise	Size of Major Hog Enterprise	% of Farmers in the Group Who Started Hog Prod. in the 1967-70 Period	Not at All	Slightly	Considerably	Major Factor
(No. of sows)						
Farrow to Finish	3- 7	21	8	53	8	31
	8-17	17	38	8	15	39
	18-32	15	33	33	17	17
	33-62	20	45	33	22	—
	63 or more	9	50	—	—	50
	All sizes	18	30	30	14	26
Weanling Pig	3-17	19	40	10	10	40
	18-32	19	80	20	—	—
	33 or more	21	72	7	14	7
	All sizes	20	63	10	10	17
(No. of hogs)						
Hog Finishing	18-122	30	31	15	15	39
	123-272	31	20	—	40	40
	273 or more	30	17	11	11	61
	All sizes	30	22	11	17	50
All farms surveyed		21	36	19	14	31

TABLE 5. COMPARISON OF REPORTED 1970 PRODUCTION OF WHEAT, BARLEY AND OATS WITH THE REPORTED USE OF THESE CROPS FOR FEED: ALL REGIONS

Type of Major Hog Enterprise	Size of Major Hog Enterprise	Wheat			Barley			Oats		
		Prod. 1970	Amt. Fed 1970	Amt. Fed as a % of Prod.	Prod. 1970	Amt. Fed 1970	Amt. Fed as a % of Prod.	Prod. 1970	Amt. Fed 1970	Amt. Fed as a % of Prod.
	(No. of sows)	(bus./farm)			(bus./farm)			(bus./farm)		
Farrow to Finish	3- 7	1,445	172	12	2,391	1,041	44	2,096	1,229	59
	8-17	1,644	450	27	4,003	2,202	55	2,545	1,631	64
	18-32	1,588	375	24	5,386	3,606	67	2,230	1,688	76
	33-62	1,240	1,077	87	5,413	4,918	91	3,020	2,975	99
	63 or more	6,257	3,423	55	20,009	16,376	82	11,561	9,403	81
	All sizes	1,876	722	38	5,361	3,779	70	3,188	2,412	76
Weanling Pigs	3-17	1,324	120	9	1,676	778	46	1,644	1,107	67
	18-32	949	195	21	2,023	1,312	65	1,582	1,104	70
	33 or more	1,049	578	55	3,264	3,182	97	2,807	2,588	92
	All sizes	1,133	338	30	2,447	1,947	80	2,150	1,766	82
	(No. of hogs)									
Hog Finishing	18-122	1,369	341	25	3,034	1,137	37	2,662	1,446	54
	123-272	2,678	1,120	42	6,347	2,761	44	2,319	792	34
	273 or more	3,260	2,005	62	9,577	7,075	74	2,279	1,596	70
	All sizes	2,490	1,280	51	6,758	4,340	64	2,425	1,438	59
All farms surveyed		1,803	741	41	4,838	3,376	70	2,707	1,996	74

DIVERSIFICATION OUT OF GRAIN PRODUCTION

One of the reasons for interest in increased livestock production in the Prairie provinces is to provide individual farmers with an additional and, hopefully, more stable market for the grain they produce. To indicate the importance to hog producers in the Prairie provinces of livestock production as a market for grain, the use of wheat, oats and barley for feed in the calendar year 1970 is compared with the production of those crops in that year (Table 5). The feed use figures reported in this table represent the amounts reported as fed to all types of livestock. Because feed use was reported on a calendar year basis, the percentages reported in Table 10 cannot be interpreted as the percent of production in 1970 that was used for feed, but these figures do provide a good indication of the importance of livestock production as a market for grain. Finally, the production figures reported are for 1970 — the year the LIFT program was in effect — and may not be those of a typical year.

For the farmers interviewed the use of wheat for feed in 1970 represented 41 percent of production that year, the use of barley represented 70 percent and the use of oats 74 percent of production. As the size of the hog enterprise increases, the use of grain for feed represents an increased proportion of total production, and for the larger farrow to finish and weanling pig enterprises the use of wheat, oats and barley for feed represents a very large proportion of the production of these crops. For example, the total use of wheat, oats and barley for feed represents 93 percent of production for the 33 to 62 sow farrow to finish enterprise classification and 89 percent of production for the 33 or more sow weanling pig enterprise classification.

PRODUCTION EFFICIENCY

Since Prairie hog producers must compete for markets with producers from other parts of the world, it is important that they achieve a level of production efficiency at least equal to that achieved by their competitors. The data collected in the survey do not provide a complete picture of production efficiency in the Prairie hog industry. However, they do shed some light both on average production efficiency levels and on the differences in the levels of production efficiency achieved by farmers with different sizes of enterprises.

Before discussing the information on production efficiency that was gathered in the survey, it should be pointed out that the survey provided no information on feed efficiency. Feed efficiency is a very important measure of the efficiency of hog production because feed costs make up such a large proportion of total

costs. In the survey, farmers were asked to estimate the amount of each type of grain and commercial feed fed to hogs (and to other types of livestock) in the calendar year 1970. It was intended that feed use per animal be estimated from this data. There are two problems with this approach. First, farmers found it difficult to provide accurate estimates of the amount of grain fed to hogs (this was especially true for those who had livestock other than hogs). Second, the rapid changes in enterprise size that occur (Table 1) make it very difficult to obtain per animal feed requirement estimates from total annual use figures.

Production Costs

Although feed costs could not be estimated, information was collected from which estimates of building and equipment costs and the costs of veterinary service and medicine could be estimated. These two categories do not include all costs of hog production. However, it was decided to concentrate on these costs because:

- (1) they make up an important share of total costs; and
- (2) for the most part the other cost elements either,
 - (a) can be estimated from other sources (eg., marketing costs), or
 - (b) are of minor importance (eg. taxes), or
 - (c) are very difficult for farmers to estimate (eg. total cost of labour)

Building and Equipment Costs

In the survey, farmers were not asked to estimate total building and equipment costs or to estimate the value of the buildings and equipment used in hog production. Rather, they were asked for a detailed description of the buildings and equipment used in hog production and then this description was used to estimate the value of buildings and equipment. This procedure was followed because:

- (1) it is sometimes difficult for farmers to estimate the value of buildings and equipment that are more than a few years old; and
- (2) it was felt that the procedure used would result in a more consistent set of estimates (one man's estimate of the value of a given building may be quite different from another's).

In estimating the value of buildings and equipment for each farm, replacement values were first calculated using current construction and equipment costs. Price indices and the year of construction were then used to determine the original value of the buildings and

TABLE 6. BUILDING AND EQUIPMENT COSTS ON FARMS IN ALL REGIONS WHOSE MAJOR ENTERPRISE IS A FARROW TO FINISH OR A WEANLING ENTERPRISE.

Type of Major Hog Enterprise	Size of Major Hog Enterprise	Ave. Annual Bldg. and Equip. Cost Per Farm	Ave. No. of Sows Per Farm	Ave. Annual Bldg. and Equip. Cost Per Sow
	(No. of sows)	(\$)		(\$)
Farrow to Finish	3- 7	422	4	105.63
	8-17	990	11	90.03
	18-32	1784	25	71.38
	33-62	2950	47	62.76
	63 or more	6212	106	58.61
	All sizes	1819	27	67.36
Weanling Pig	3-17	491	8	61.32
	18-32	862	21	41.02
	33 or more	1735	68	25.52
	All sizes	1122	38	29.52

equipment. This original value was then used in the estimation of annual costs (Tables 6 and 7).

The estimated building and equipment costs include the costs of all equipment used only for the hog enterprises (heating equipment, water systems, feed handling equipment, manure handling equipment etc.), but do not include the costs of equipment that may be used by more than one enterprise (feed processing equipment, manure spreaders, front end loaders, etc.). Information was collected which will allow the estimation of the annual costs of equipment used in more than one enterprise, but additional information is needed before these costs can be allocated among enterprises.

In calculating the per sow and per hog costs reported in Tables 6 and 7, no allowance was made for the fact that some feeder pigs are purchased for finishing by farmers whose main enterprise is a farrow to finish or weanling pig enterprise and that some sows are kept by farmers

whose main enterprise is a hog finishing enterprise. As a result, the per animal costs are slightly overestimated.

Using the pigs per litter and death loss figures reported by the farmers interviewed, the average per sow costs of \$67.36 for farrow to finish enterprises and \$29.52 for weanling pig enterprises are \$4.99 per hog produced for farrow to finish enterprises and \$2.03 per weanling produced for the weanling pig enterprises.² After accounting for reported death loss, the cost per hog marketed is equal to \$3.99 for hog finishing enterprises.

For all three enterprise types, per animal building and equipment costs decline substantially as the size of the enterprise increases. In fact, the cost for the largest weanling pig and hog finishing enterprise groups are less than one-half the cost of the smallest enterprise groups. The cost for the largest farrow to finish enterprise group is just over one-half of the cost for the smallest enterprise group.

TABLE 7. BUILDING AND EQUIPMENT COSTS ON FARMS IN ALL REGIONS WHOSE MAJOR HOG ENTERPRISE IS A HOG FINISHING ENTERPRISE.

Size of Hog Finishing Enterprise	Ave. Annual Bldg. and Equip. Cost Per Farm	Ave. No. of Hogs Per Farm*	Ave. Annual Bldg. and Equip. Cost Per Hog
(No. of hogs)	(\$)		(\$)
18-122	463	60	7.72
123-272	812	197	4.12
273 or more	2536	714	3.55
All sizes	1555	408	3.81

*That is, average number of feeder hogs purchased in 1970.

Veterinary and Medicine Costs

Averages of the reported annual costs of veterinary service and medicine together with estimated cost per animal are presented in Tables 8 and 9. As with building and equipment costs, per animal costs are slightly

² Costs per market hog and per weanling pig could also be estimated by dividing annual costs per farm by the number of hogs or pigs sold in that year. For a year in which enterprise size is increasing (as it was in 1970), the estimates obtained using this procedure would be too high because the costs per farm include the cost of facilities added in the year while the first lot of pigs using the new facilities would not be sold until the following year. Similarly, per animal cost estimates based on pigs purchased are more accurate for hog finishing enterprises than are estimates based on the number of hogs sold.

TABLE 8. COST OF VETERINARY SERVICE AND MEDICINE ON FARMS IN ALL REGIONS WHOSE MAJOR HOG ENTERPRISE IS A FARROW TO FINISH OR A WEANLING PIG ENTERPRISE.

Type of Major Hog Enterprise	Size of Major Hog Enterprise (No. of sows)	Ave. Annual Vet. and Med. Cost Per Farm (\$)	Ave. No. of Sows Per Farm	Ave. Annual Vet. and Med. Cost Per Sow (\$)
Farrow to Finish	3- 7	23	4	5.79
	8-17	64	11	5.79
	18-32	135	25	5.42
	33-62	226	47	4.81
	63 or more	806	106	7.61
	All sizes	163	27	6.03
Weanling Pig	3-17	29	8	3.61
	18-32	119	21	5.65
	33 or more	307	68	4.52
	All sizes	171	38	4.51

overestimated because no allowance was made for: (1) the feeder pigs purchased and finished by farms with farrow to finish and weanling pig enterprises; and (2) the sows kept by farms with hog finishing enterprises.

Unlike the cost of buildings and equipment, the per animal cost of veterinary service and medicine does not tend to decrease as the size of the hog enterprise increases. The data show little correlation between size of enterprise and per animal cost of veterinary service and medicine. For example, within enterprise types veterinary and medicine costs are highest for the largest farrow to finish enterprise, highest for the medium size weanling pig enterprises and highest for the smallest hog finishing enterprises.

Pigs per Litter and Litters per Year

Two related factors affecting efficiency in hog production are the number of litters per sow per year and the number of pigs farrowed per litter (Table 10). Most

of the farmers interviewed produce two litters per sow per year, although 39 percent of the farmers with very small farrow to finish enterprises reported only one litter per year. The farmers interviewed reported an average of 8.7 live pigs farrowed per litter. There is virtually no variation in the reported pigs per litter for different sizes of weanling pig enterprises, but the number of pigs per litter reported by farmers with medium and large farrow to finish enterprises is slightly larger than the number reported by farmers with smaller farrow to finish enterprises.

TABLE 10. PERCENT OF FARMERS REPORTING TWO LITTERS PER SOW PER YEAR AND NUMBER OF LIVE PIGS FARROWED PER LITTER ON FARMS IN ALL REGIONS.

Type of Major Hog Enterprise	Size of Major Hog Enterprise (No. of sows)	% of Farmers Reporting Two Litters Per Sow Per Year	No. of Live Pigs Farrowed Per Litter
Farrow to Finish	3- 7	61	8.5
	8-17	89	8.4
	18-32	82	8.9
	33-62	89	9.1
	63 or more	100	8.8
	All sizes	82	8.7
Weanling Pig	3-17	82	8.9
	18-32	82	8.8
	33 or more	96	8.8
	All sizes	88	8.8
All farms surveyed*		85	8.7

TABLE 9. COST OF VETERINARY SERVICE AND MEDICINE ON FARMS IN ALL REGIONS WHOSE MAJOR HOG ENTERPRISE IS A HOG FINISHING ENTERPRISE.

Size of Hog Finishing Enterprise	Ave. Annual Vet. and Med. Cost Per Farm (\$)	Ave. No. of Hogs Per farm*	Ave. Annual Vet. and Med. Cost Per Hog (\$)
(No. of hogs)			
18-122	26	60	0.43
123-272	51	197	0.26
273 or more	283	714	0.40
All sizes	159	408	0.39

*That is, average number of feeder pigs purchased in 1970.

*The figures for all farms in the region include data from those hog finishing farms that had sows.

Death Loss

Another measure of hog production efficiency is the proportion of the pigs born or purchased that die before they are ready for market. In the survey, farmers were asked to estimate the number of death losses on their farms in 1970. From these figures, losses per sow were estimated for farrow to finish and weanling enterprises and losses per feeder pig purchased were estimated for hog finishing enterprises (Tables 11 and 12).

The per hog death losses for hog finishing operations show a trend towards lower death losses as enterprise size increases (Table 12). The per sow figures for farrow to finish and weanling pig operations do not show such a clear cut trend even though the losses on those farms with the largest enterprises are, for both enterprise types, substantially below those for the other enterprise sizes (Table 11). These per animal death loss figures are slight overestimates, as were the per animal cost estimates, because no allowance was made for those farms with mixed hog enterprises.

TABLE 11. DEATH LOSS PER SOW ON FARMS IN ALL REGIONS WHOSE MAJOR HOG ENTERPRISE IS A FARROW TO FINISH OR A WEANLING PIG ENTERPRISE.

Type of Major Hog Enterprise	Size of Major Hog Enterprise (No. of sows)	Annual Death Loss Per Sow (No. of pigs)
Farrow to Finish	3- 7	2.75
	8-17	2.64
	18-32	2.36
	33-62	2.66
	63 or more	1.92
	All sizes	2.33
Weanling Pig	3-17	2.75
	18-32	2.86
	33 or more	1.87
	All sizes	2.00

Grade Distribution

The final factor relating to production efficiency for which data were collected in the survey is the quality of market hogs produced as measured by the grade distribution of hogs sold. Farmers with farrow to finish and hog finishing enterprises were asked to estimate the proportion of slaughter hogs sold that graded 105 or better, between 99 and 104, and 99 or less. These estimates were then weighted by the number of hogs sold to obtain the average grade distribution for each enterprise group (Table 13).

TABLE 12. DEATH LOSS PER HOG PURCHASED ON FARMS IN ALL REGIONS WHOSE MAJOR HOG ENTERPRISE IS A HOG FINISHING ENTERPRISE

Size of Hog Finishing Enterprise	Death Loss Per Feeder Pig Purchased (No. of pigs)
(No. of Hogs)	
18-122	0.067
123-272	0.051
273 or more	0.042
All sizes	0.044

Farmers with large hog enterprises in general reported better grades than were reported by farmers with smaller enterprises. This is more evident for farrow to finish operations than for hog finishing enterprises. The difference between the two enterprise types is probably at least partially explained by the fact that the range of enterprise sizes is greater for the hog finishing classifications than for the farrow to finish classifications.

SUMMARY

This brief examination of the hog industry in the Prairie provinces has been directed at four related issues: growth in hog production, stability of production, diversification out of cash grain production and efficiency of production.

Because the data presented on the size of enterprise were only available for a three year period, it is difficult to identify the increases in production that occurred either

TABLE 13. GRADE DISTRIBUTION FOR SLAUGHTER HOGS MARKETED BY FARMS IN ALL REGIONS

Type of Major Hog Enterprise	Size of Major Hog Enterprise	Percent of Hogs Sold that Graded		
		105 or Better	Between 99 and 104 inclusive	99 or Less
(No. of sows)				
Farrow to Finish	3- 7	9	53	38
	8-17	9	65	26
	18-32	14	66	20
	33-62	17	68	14
	63 or more	24	63	13
	All sizes	18	65	17
(No. of hogs)				
Hog Finishing	18-122	11	51	38
	123-272	8	57	35
	273 or more	16	59	25
	All sizes	15	59	26
All farms surveyed		17	62	21

as permanent growth or as temporary increases. However, much of the increase occurred on farms with large hog enterprises. This increase is likely to be permanent because of the large investments in buildings and equipment associated with production increases on farms with large enterprises.

Two factors frequently cited as causes of instability in hog production in the Prairies are:

- (1) Producers who begin hog production when prices are favourable and go out of production when prices are unfavourable; and
- (2) the variability of grain markets.

The data presented do not support the suggestion that there are many producers who go in and out of hog production, but the hypotheses could not definitely be disproved. The suggestion that variability in grain markets are an important cause of instability in hog production is supported as nearly one-half of the farmers interviewed who began production in the 1967-70 period reported that poor grain markets were either a major or considerable influence on their decision to begin production.

Farmers who produce livestock have a market for the grain they produce that is not available to cash grain farmers. For the farmers interviewed, the market for grain provided by livestock production is very important. The use of wheat for feed in 1970 represented 41 percent of production in that year, the use of barley represented 70 percent and the use of oats 74 percent.

In general, the survey data indicate that farmers with large hog enterprises are more efficient than those with small enterprises. The data suggests that compared to farmers with small hog enterprises, farmers with large enterprises:

- (1) have lower building and equipment costs;
- (2) are more likely to produce two litters per sow per year;
- (3) have lower death losses; and
- (4) produce higher quality hogs.

The evidence for a larger number of pigs per litter for large enterprises than for small enterprises is less conclusive. In addition, there is no evidence of lower veterinary and medicine costs on farms with larger enterprises.

If, as suggested, hog production on farms with large enterprises is more efficient than on farms with small enterprises, then the proportion of total production that is produced by farms with large enterprises is likely to continue to increase in the future. If this occurs, aggregate production levels are likely to be more stable because, as has already been pointed out, the relatively large building and equipment investment on farms with large enterprises causes production levels on these farms to be more stable.

Plans for Further Study of Hog Production

This article does not provide a complete picture of the hog industry in the Prairie region. The total set of data collected in the survey does provide a more detailed description of hog production in the Prairies. Much of this information will be made available in the near future. In addition, the survey data will be used in a larger study of production adjustment at the farm level. In this later study an attempt will be made to determine the adjustments in production levels and enterprise combinations that farmers are likely to make in response to changes in livestock and feed prices and to changes in government policies.

MILK QUOTAS: WHAT DO THEY MEAN?



V. McCormick *

Quota negotiability in both fluid and industrial milk markets have allowed producers to plan the size of their operations which is very important for commercially oriented producers who now supply the major portion of Canada's total milk requirements.

INTRODUCTION

Milk marketing in Canada today is a highly complex system, involving federal and provincial authority for regulating, licensing, sanitary controls, milk quotas, a complicated pricing structure, subsidies, imports and exports. Perhaps the least understood of all the links in the marketing chain is the quota system.

Webster's dictionary defines quota as "the share or proportion assigned to each in a division or to each member of a body" and also as "the number or amount constituting a proportional share." A marketing quota is, in effect, the opportunity to a share of a particular market at a particular price.

At the present time there are three distinct producer quota plans operating in milk marketing areas in Canada - fluid milk quotas, subsidy eligibility quotas and market-share quotas.

FLUID MILK QUOTAS

History

Quotas on the amount of milk marketed have been used in fluid milk markets for several decades. The first quota

arrangements were introduced in certain milksheds in the United States in the 1920's, but were not generally adopted in Canada until the mid-1930's.

The original purpose of fluid milk quotas was to reduce seasonal variation in production and, thus, supply year-round demand. Quotas help to compensate the producer for the higher costs, such as feeding, management and capital, involved in producing a constant supply of high quality milk on a year-round basis. Historically, producers have received higher prices for quota milk than for over-quota or surplus milk.

The marketing of fluid milk (for fresh consumption) in Canada is under provincial jurisdiction. Provincial milk control legislation, established in the 1930's, set out to stabilize prices, both to the producer and the consumer. The provincial milk Acts and the regulations under them provide for licensing, milk quality, fluid milk prices, minimum sanitary standards, milk quotas, etc.

Market or Plant Quotas

Quotas for milk qualifying for fluid use are administered by Milk Control Boards or similar agencies and are generally allocated on a market area basis, but in some areas they are allocated on an individual plant basis. A market area may encompass an entire region. A quota for a fluid market is initially determined by the expected requirements, plus a reasonable reserve for a specified

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time period, 12 months, 6 months, etc., for that particular market. This is determined by assessing the needs of all the dairies in the market. In some markets the quota is based on fluid milk requirements plus other dairy requirements such as fresh fluid cream, ice cream, cottage cheese, etc.

Quotas based on a market area basis are designed to provide for adjustment of resources in milk production and marketing, an equitable pricing structure to producers and equity among plants within the market.

If the quota is based on an individual plant and that plant is increasing its volume of sales, producers will likely receive higher quotas over time, but if sales are decreasing, the situation is reversed and the producers' quotas are reduced.

The Producers' Quota

After the milk board or other agency makes an estimate of the total fluid milk requirements for a market, each producer is assigned his quota which reflects his proportional share of the total market. Individual marketing quotas are based initially on the production performance of farmers during a representative period and adjusted, usually yearly, as required. Quotas are generally expressed in pounds of milk delivered to a plant per day. When the Ontario Milk Marketing Board established the Group Pooling system in 1967, the fluid milk producer's quota in Southern Ontario was set on the basis of his average daily sales for the period August 1965 to July 1966, excluding sales in the months of April, May and June. In British Columbia the period for establishing producer's quota is "the four months of any calendar year in which the average daily production of qualifying milk was the lowest during that year."

Negotiability

In fluid markets under milk control board orders in Canada, quotas may be transferred to other licensed producers, or parts of the quota are transferable to other licensed producers, as in Ontario and Manitoba. They are also negotiable (may be sold). Negotiability allows a producer to expand or contract his milk deliveries or allows a new producer to enter the market without affecting the total milk supply in that market.

In Ontario, when a producer's quota is transferred, the Ontario Milk Marketing Board retains 25 percent of that quota to provide for graduated entrance to the system. The Board may also acquire quota by a penalty (quota reduction) on producers who fail to deliver 90 percent of their daily quota for each of two consecutive months.

Producers may purchase additional fluid quota rights, which vary in cost by market and region, according to supply and demand. (In markets where expansion is occurring, additional quotas may be issued free to existing producers on a pro-rata basis). Group I pool quotas in Southern Ontario in August 1973 had an average value of \$15.01 per pound of milk with values ranging from a low of \$10.00 per pound to a high of \$20.00 per pound. This means that a fluid producer who paid \$15.00 per pound for quota rights would pay \$1,500 for the right to deliver daily an extra 100 pounds of milk. At August, market prices (\$7.90 for fluid, \$5.23 blend for industrial) and assuming producer prices and costs remain constant it would take this producer about 18 months to break even on his additional investment.

Fluid milk quota values traditionally have been relatively high in British Columbia and relatively low in the Atlantic Provinces. Fluid quota values declined substantially in all provinces in the second half of 1973 from earlier levels. The decline in values partly reflects the current high costs of producing milk in relation to the market prices. In some areas, producers will be receiving all the additional quota they require at no extra costs as the result of normal market expansion. Quota values over time tend to become capitalized into production costs as quota rights are sold by original recipients to new shippers.

Entry of Qualifying Milk Producers into Fluid Market

In order to allow industrial milk producers in Ontario who produce milk that meets fluid sanitary standards into the fluid market, a graduated entry program was instituted by the Ontario Milk Marketing Board. A quota is allocated to a graduated entrant on the basis of his industrial milk deliveries during the base period (as established by the Board) and divided by five. In the first year the graduated entrant would be allowed 20 percent of his total quota deliveries into the fluid market; in the second year the quota would be 40 percent, etc. To qualify for free allocation of quota under the graduated entry system, a producer is required to meet certain production and sanitary standards and must have been a milk producer prior to and continuously since July 1, 1968. Similar arrangements exist in Quebec and British Columbia.

Classified Pricing

Plants pay different prices for milk in accordance with the manner in which they use it. Milk used for fluid purposes is placed in the highest price class. However, producers are usually not paid the top price for all their

quota milk, as the quota should allow for a reserve. In Ontario, for example, producers receive the top fluid price for about 85 percent of quota allocations. Cream for fluid use is in a lower priced class, followed by milk for the various manufactured products. The classification procedure varies from market to market, or region, depending on local market conditions.

Fewer Inequities in System

Over the years many inequities have existed regarding allocation of quotas, market agreements on pricing of fluid milk for dairy requirements, quality standards, etc., but these inequities are being reduced gradually, and many are being eliminated as milk marketing becomes more sophisticated. Milk pooling systems, whereby payments made for different class prices are averaged and each producer in the group covered by the pool receives payment on the same basis, are eliminating price inequities in several markets.

SUBSIDY ELIGIBILITY QUOTAS

In an effort to raise producer returns, the Federal Government, through the Canadian Dairy Commission, established subsidy eligibility quotas for industrial milk and cream in the dairy support year 1967-68. This entitled producers to receive the federal government subsidy of \$1.21 per 100 pounds of milk, and an equivalent amount for butterfat in cream. The subsidy has remained in effect but the amount has changed from time to time.

The current (1973-74) subsidy rate was established April 1, 1973 at \$1.45 per 100 pounds of industrial milk testing 3.5 percent butterfat.

To finance the disposal of surplus dairy products (largely skim milk powder) into export markets, a holdback from subsidy payments was made. The holdback has varied according to domestic prices and the prices received on world markets. In 1973-74, the holdback is 10 cents per 100 pounds of industrial milk.

In 1967-68, the first year of the subsidy eligibility quota program, the quota of an individual producer was equal to his milk deliveries in the previous dairy year. Producers who delivered less than 50,000 pounds of milk, or equivalent in cream, had an opportunity to expand their production by an open quota arrangement of up to 50,000 pounds of milk or the equivalent in cream. The following year, 1968-69, the very small producers (those who had deliveries of less than 12,000 pounds of milk or 420 pounds of butterfat in 1967-68)

were not eligible for a subsidy quota. However, the Federal Government made a phasing-out payment to those producers who were excluded from subsidy in 1968-69 equal to the subsidy rate on their previous year's deliveries. In 1971-72, producers whose quotas had been previously withdrawn were re-instated if their deliveries were 420 pounds or more of butterfat in the dairy year.

The subsidy eligibility quota was a first step in an attempt to keep total Canadian milk production in line with domestic market requirements on a butterfat basis. However, when Canadian butterfat requirements are met from domestic production, the result is a very substantial surplus of skim milk powder, which must be exported, usually at lower than domestic prices.

When the subsidy quotas were first introduced, they were tied to the herd. An individual farmer could apply for a quota reallocation if he purchased a farm and herd, or a herd, from a quota holder who surrendered his quota to the Canadian Dairy Commission. There was also a ceiling on the quota as the reallocation could not bring the maximum total quota for the buyer above 300,000 pounds of milk or 10,500 pounds of butterfat.

Since they were introduced in 1967-68, individual subsidy quotas have changed drastically, reflecting the substantial impact of adjustment through reallocation which is occurring each year - about 10 percent of the global quota is transferred annually between producers.

There is currently an upper limit of 700,000 pounds of industrial milk (or 24,500 pounds of butterfat) per farm operation which is eligible for subsidy in the dairy year. (This is the equivalent of 70 cows with an average annual yield of about 10,000 pounds of milk). In provinces where fluid milk pools admit qualifying industrial milk producers, fluid producers are eligible for subsidy on a portion of their deliveries. The amount eligible for subsidy depends on the nature of the pooling arrangement. The industry has been requesting that the Canadian Dairy Commission make an upward adjustment on the limit of individual quotas to conform to the scale of operation of the larger producers. These limits have been and continue to be under review.

At the time the subsidy quotas were introduced, there was a problem of over-production. During the current downturn in the production cycle the main object of the subsidy program has been to bring milk production up to the level of demand, thus incentives to production are more important than controls.

Temporary Subsidy

On August 1, 1973, a temporary subsidy of 56 cents per hundred pounds of milk (or cream equivalent) was provided to producers on all quota deliveries of industrial milk. This includes fluid producers under market-sharing quota. In provinces not under the market-sharing quota, the temporary subsidy is paid to fluid producers on all shipments in excess of 125 percent of fluid sales. The new temporary subsidy was introduced to encourage increased milk production, in consideration of unusually high feed costs and other factors.

MARKET SHARING QUOTAS

Why They're Necessary

The weakness in the subsidy eligibility quota as a means to equate supply with demand was the fact that the Federal Government had no direct jurisdiction over surplus fluid milk, this being a provincial responsibility. However, the Federal Government, through the Canadian Dairy Commission subsidized the export of surplus dairy products, which was financed at that time mostly from holdbacks from subsidy payments to industrial milk producers. There was no practical way of collecting levies from fluid shippers. After considerable discussion between provincial marketing agencies in Ontario and Quebec and the Canadian Dairy Commission, a comprehensive milk marketing plan was agreed to in January 1971.

This plan brought into effect a market-sharing system for industrial milk and that portion of milk produced by fluid producers which is used for manufacturing purposes. The arrangements with respect to milk deliveries in Ontario and Quebec had started December 1, 1970.

The agreement also applied to cream producers in Quebec but Ontario cream producers did not enter the plan until April 1, 1971. Prince Edward Island, Alberta, Saskatchewan and Manitoba entered into the program at a later date. British Columbia joined the plan, effective October 1, 1973. Nova Scotia and New Brunswick had not joined the market-sharing plan as of November 1, 1973. Nova Scotia and New Brunswick are preparing to negotiate for entry into the plan.

Basis of Producer's Quota

Under the market-sharing arrangement each producer received a market-sharing quota based on his deliveries in the year preceeding entry into the plan or on his subsidy

eligibility quota if that was greater than his deliveries. The levy rate (for export assistance) on within-quota deliveries under the market-sharing plan was the same as the holdback for within-quota deliveries under the subsidy eligibility quota. However, the penalties for over-quota deliveries under the market-share plan were considerably greater. The current (1973-74) levy or holdback on milk shippers' delivery quotas is 10 cents per 100 pounds of milk. In provinces where market-sharing arrangements are in effect, the levy on milk deliveries in excess of market-sharing quota is \$1.50 per 100 pounds of milk. In provinces not under the market-sharing plan, the holdback is \$1.05 per 100 pounds of milk.

In brief, the subsidy eligibility quota refers to a share of the federal subsidy; the market-sharing quota refers to a share of the market. The same amount of levy or holdback¹ for export assistance is deducted from each group of producers for deliveries within their quota allocations. Penalties (levies) for over-quota deliveries are greater for market-sharing quotas than for subsidy eligibility quotas. However, about 95 percent of the industrial milk and cream sold in Canada is now under the market-sharing arrangement. In the provinces not under market-sharing, a large percentage of total deliveries is utilized for fluid market requirements.

Shortly after the market-sharing quota program became effective, the Canadian Dairy Commission established a new arrangement for reallocating subsidy eligibility quotas between producers. The new marketing quotas became freely negotiable and the subsidy eligibility quota, which previously had been attached to the herd, could be reallocated along with the market-sharing quota. If a producer releases all or part of his market-sharing quota to another, the subsidy eligibility quota is attached to the market-sharing quota and is transferred with it.

If a producer's market quota is larger than his subsidy quota, he may release the difference in market quota without releasing any subsidy quota. If he releases his entire market quota, he must also release his entire subsidy quota. There is a minimum amount (420 pound of butterfat) which can be transferred between producers. The market quotas are administered by provincial boards, and the subsidy quotas by the Canadian Dairy Commission.

¹ The term "holdback" refers to deductions made directly from the subsidy payments by the Canadian Dairy Commission in the provinces not under market-sharing. "Levy" refers to deductions made from the "producers" returns from the market and remitted by provincial producer agencies to the Canadian Dairy Commission.

In Nova Scotia and New Brunswick, where the market-sharing plan is not in effect, the subsidy eligibility quota is still tied to the herd and must move with it.

There are provisions for quota reallocation to a new shipper. The present provision under the market-sharing arrangement is for a minimum of 100,000 pounds of milk (or 3,500 pounds of butterfat) for milk shippers and 1,750 pounds of butterfat for cream shippers. The minimum under the subsidy eligibility quota is 12,000 pounds of milk or 420 pounds of butterfat.

Market-sharing quotas, although negotiable, have a much lower transfer value than fluid milk quotas. Market-sharing quotas, with subsidy eligibility quota attached, have been selling in Ontario in the 1973-74 dairy year at an average value of around 85 to 95 cents per 100 pounds of milk. Values reported ranged as low as 50 cents per 100 pounds. The relatively low values largely reflect the fact that the global market-sharing quota is

not a constraint on total production of industrial milk. Insufficient market-sharing quotas without subsidy quota attached have been transferred this year to date in Ontario to establish a valid trading value.

SUMMARY

One of the main criticisms of milk quotas has been that they tend to retard reallocation of producers. There appears to be little indication that quotas have retarded consolidation of farm units. Quota negotiability in both fluid and industrial milk markets have allowed producers to plan the size of their operations, which is becoming more and more important for commercially oriented producers who now supply the major portion of Canada's total milk requirements.

Canada was the first major milk producing country in the World to initiate measures to adjust total milk production to domestic needs on butterfat basis via individual delivery quotas.

POLICY AND PROGRAM DEVELOPMENTS IN CANADA

AGRICULTURAL PRODUCTS MARKETING ACT

(Alberta Egg Order)

The Alberta Egg and Fowl Marketing Act of Alberta is authorized, in relation to the powers granted under the laws of Alberta in respect to the marketing of eggs in provincial, interprovincial and export trade, to make orders fixing, imposing and collecting levies or charges from persons situated in Alberta and engaged in the marketing of eggs. This money will be used for the Commodity Board's purposes, including the creation of reserves and the payment of expenses and losses. (August 21, 1973)

(Nova Scotia Hog Order)

The Natural Products Marketing Act of Nova Scotia is authorized to regulate the marketing of hogs in provincial, interprovincial and export trade. The Commodity Board is authorized to make orders fixing levies or charges and imposing them upon and collecting them from persons engaged in the marketing of hogs. (September 4, 1973)

(Saskatchewan Hog Order)

The Saskatchewan Hog Marketing Commission is authorized to regulate the marketing of hogs in interprovincial and export trade and for such purposes may, with respect to persons and property situated within the Province of Saskatchewan, exercise all or any powers like the powers exercisable by it in relation to the marketings of hogs locally within that Province under the Natural Products Marketing Act, 1972 and any plan for the marketing of hogs. (September 18, 1973)

(Customs Tariff Imports of Sweet Cherries and Greenhouse Tomatoes)

The Surtax Order on the imports of sweet cherries and greenhouse tomatoes has been revoked. The import of these items, respectively tariff items 9203-1 and 8724-1, do not represent serious injury to Canadian producers of like or directly competitive products.

CROP INSURANCE ACT

(Province of Saskatchewan)

In Schedule A of the Crop Insurance Agreement for 1971-72, insurance coverage is extended to additional

areas of the province, and premium rates and coverage levels are adjusted. For 1972-73, this Agreement is amended to provide insurance coverage of up to 70 percent of the long-term average on spring wheat, durum wheat, oats and barley and, further, Schedule A of this Agreement is amended to extend insurance coverage to all remaining areas of the province and to adjust premium rates and coverage levels. (August 21, 1973)

(Province of Nova Scotia)

The Crop Insurance Agreement is amended and now applies to peas and beans for processing. The Province of Nova Scotia will pay 25 percent of the necessary premiums. (September 4, 1973)

AGRICULTURAL PRODUCTS CO-OPERATIVE MARKETING ACT

(Ontario Bean Order)

The Ontario Bean Producers' Marketing Board agrees to market on a co-operative plan such beans containing not more than 2 percent damage or more than 18 percent moisture produced in the Province of Ontario in 1973 and delivered for its accounts on the basis of two pools, one pool for yellow-eye beans and one pool for pea beans, established according to the grades, No. 1 Canada Eastern Yellow-eye Beans and No. 1 Canada Eastern Pea Beans. The Board will pay to primary producers of beans delivered to it for pooling in accordance with the terms of this agreement, an initial payment of \$5.76 per hundredweight for the grades designated above. (September 11, 1973)

FLOOD AID APPROVED

The federal government is prepared to enter into negotiation with the province of Ontario to develop an agreement under which the federal government would match provincial funds in the rebuilding of dikes along Lake Erie and Lake St. Clair to protect about 45,000 acres of valuable agricultural land from high water and storms. The estimated federal contribution is \$7,312,500 or 45 percent of the total cost for the projects primarily in Kent and Essex counties. The federal government has already spent \$1,215,000 towards the rebuilding of dikes in Harwick, Pelee and Mersea Townships.

CONSUMER MILK SUBSIDY

To contain and roll back milk prices, the federal government intends to pay a consumer subsidy of five cents a quart on fluid milk. The amount of roll back possible may vary from province to province and will depend upon the results of negotiations. Once fixed the price must remain at that level for 12 months. There will also be a 20-cents-per-pound subsidy on skim milk powder marketed in consumer size packs. The new subsidy will cost about \$108 million. Agreements have been reached with the provinces of Quebec, Saskatchewan and Nova Scotia. In Quebec, the price of milk has been reduced by four cents a quart from the previously announced level. The price per quart is now 34 cents. In Saskatchewan, the price has been reduced by three cents a quart; it is now 36 cents a quart instead of 39 cents. Nova Scotia has reduced the price of milk from 41 to 39 cents a quart. In Ontario, the price has been reduced from 49 cents a quart to the base price of 45 cents. Alberta will reduce the price of milk by five cents a quart, from 40 cents to 35 cents. British Columbia has agreed to reduce the price of milk to the consumer by four cents a quart.

FEDERAL-PROVINCIAL MEETING

"The federal and provincial ministers of Agriculture recently met in Ottawa at the invitation of Prime Minister Trudeau. The provinces welcomed federal initiatives to improve price and income stability for farmers, which will in turn encourage orderly increases in food supplies, assuring consumers of an adequate food supply. In order to provide a basis upon which stabilization programs could be developed, principles that might be embodied were discussed, including:

- (a) recognition of competitive advantage;
- (b) equating of new programs with Canada's declaration of intent to further reduce barriers to trade;
- (c) reduction of uncertainty through forward pricing mechanisms, such as longer-term production contracts and sales agreements;
- (d) financial involvement of producers, where possible, in stabilization programs;
- (e) the equal application of stabilization programs to all producers of a commodity."

The provinces agreed to further discuss specific proposals put forward by federal Agriculture Minister Eugene Whelan.

CANADA-QUEBEC AGREEMENT ON SMALL FARM DEVELOPMENT PROGRAM

"Federal Agriculture Minister, Eugene Whelan and Quebec Agriculture Minister, Normand Toupin have

signed an agreement to implement the Small Farm Development Program in the province of Quebec." "The objectives of the Canada-Quebec agreement are to:

- develop the family farm with improved structure and with income level comparable to other sectors;
- improve conditions for people affected by the consolidation of structures in agriculture;
- combine the efforts of both levels of government to achieve optimum efficiency in solving small farm problems."

SPECIAL TRANSPORTATION ASSISTANCE

In addition to payments made under the Feed Grain Transportation and Storage Assistance Regulations, the Canadian Livestock Feed Board has been authorized to make payments for the benefit of livestock feeders in amounts equal to the difference between actual transportation costs of feed grain transported during the national railway strike and the fifteen days following, and the transportation costs that would have been incurred if the feed grain had been shipped over the least transportation cost routes during that period.

CATTLE TARIFF REIMPOSED

On September 21st, the federal government reimposed a tariff of 1.5 cents a pound on live cattle and three cents a pound on beef moving into Canada. This is in response to a flood of United States cattle and beef coming into Canada which threatens to seriously disrupt the Canadian cattle industry due to a downward pressure on prices to producers.

FRUIT AND VEGETABLE STORAGE CONSTRUCTION ASSISTANCE PROGRAM

This program is intended to encourage construction of storage facilities suitable for preservation of perishable fruit and vegetables over an extended period of time. Assistance groups such as agricultural producer associations, co-operatives or boards engaged in producing, storing and marketing of fruit and vegetables will be eligible for assistance. The policy is to provide assistance of one-third of the total cost of construction to a maximum payment of \$500,000. Application for assistance under the program will be available from the Fruit and Vegetable Division, Agriculture Canada, Ottawa, K1A 0C5.

FEED GRAIN PROGRAM

"The 1973-74 feed grains program includes two main provisions:

1. The pricing of feed grains, moved from the Canadian Wheat Board area to other parts of Canada, based on off-Board prices within the Wheat Board area.

2. Buying of feed grains by the Agricultural Products Board to provide a broader base and give more certainty to the off-Board market within the Wheat Board area. This will ensure that no producer in the Wheat Board area will have to sell his grain at distress prices even if quotas are not immediately available to him in what he considers sufficient quantity."

The Agricultural Products Board announced September 28th that "it would begin to offer to buy feed oats and barley in the prairies on Wednesday, October 3, 1973. The offer will be put into effect by the Canadian Wheat

Board, acting as the agent for the Products Board at country elevators. For the present, prices offered will be \$1.98 a bushel for No. 1 feed barley and \$1.16 for No. 1 feed oats. These prices are basis Thunder Bay or Vancouver. Offering prices are liable to change without notice. Producers wishing to calculate the offering prices in their own area can do this by adding 58 cents to the Wheat Board initial price for No. 1 feed barley for their delivery point or 11 cents to the initial price for No. 1 feed oats. Lower grades will bring correspondingly lower prices. The Products Board will not pay more than the No. 1 feed price."

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ECONOMICS BRANCH PUBLICATIONS

Available from the Economic Communications Unit, Agriculture Canada, Ottawa, K1A 0C5

The Tender Fruit Industry in Canada. R.W. Anderson and T.A. Bennett. Ottawa, July 1973. 64p. Charts, tables. Pub. No. 73/12. Free.

Working paper on : The Production and Marketing of Light Lambs in Quebec. A Federal Employment Stimulation Project. Montreal, July 1973. Tables. 45p. Pub. No. 73/13. Free.

Marketing Boards '71. J.M. Sullivan. Ottawa, July 1973. Bilingual. Tables. 21p. Pub. No. 73/15. Free.

AGRICULTURE CANADA PUBLICATIONS

Available from the Information Division, Agriculture Canada, Ottawa, K1A 0C5

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Ninety-nine Range Forage Plants of the Canadian Prairies. J.B. Campbell, H.F. Best and A.C. Budd. Ottawa, 1966. Reprinted 1973. 102p. Illus. Cat. No. A53-964. \$2 per copy.

Growing Field Peas. S.T. Ali-Khan and R.C. Zimmer. Ottawa, 1972. Reprinted 1973. 8p. Tables. Prepared in the Research Station, Morden, Manitoba. Cat. No. A53-1493. Free.

Broiler Raising in Canada. F.G. Proudfoot *et al.* Ottawa, 1972. 48p. Illus., tables, figures. Cat. No. A53-1509. Free.

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Canadian Lamb. Ottawa, 1973. Bilingual. Prepared by Information Division. Cat. No. A63-1501. Free.

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Diseases and Pests of Potatoes. W.A. Hodgson, D.D. Pond and J. Munro. Ottawa, 1973. 73p. Illus. Prepared in the Research Station, Fredericton, N.B. and Plant Protection Division, Ottawa, Ontario. Cat. No. A43-1492. Free.

Pesticides Listed By Active Ingredient Registered For Use In Canada for 1972. Ottawa, 1973. 112p. Prepared by Control Products Section, Plant Products Division. Cat. No. A41-17/1972. \$1.50 per copy.

Guides to the Chemicals Used in Crop Protection. E.Y. Spencer. 6th edition. Ottawa, 1973. 542p. Loose-leaf. Prepared in the Research Branch. Cat. No. A43-1093. \$5.75 per copy.

Trickle Watering and Liquid Feeding System for Greenhouse Crops. E.B. Mason and R.M. Adamson. Ottawa, 1973. 19p. Figures. Prepared in the Research Station, British Columbia. Cat. No. A53-1510. Free.

Food Prices Review Board. Quarterly Report. Ottawa, September 1973. Bilingual. 50p. Charts.

STATISTICS CANADA PUBLICATIONS

Available from the Publications Distribution Unit, Statistics Canada, Ottawa, K1A 0T7

Index Numbers of Farm Prices of Agricultural Products. Vol. 28, No. 7, July 1973. Bilingual. Cat. No. CS62-003. 10¢ per copy, \$1 per year.

Farm Wages in Canada. May, 1973. Bilingual. Cat. No. CS21-002. 25¢ per copy. 75¢ per year.

Farm Cash Receipts. Vol. 34, No. 6, June 1973. Bilingual. Cat. No. CS21-001. 20¢ per copy, \$2 per year.

Farm Input Price Indexes. Second quarter, 1973. Bilingual. Cat. No. CS62-004. 25¢ per copy, \$1 per year.

Quarterly Bulletin of Agricultural Statistics. Vol. 66, No. 1. First quarter 1973. Bilingual. Cat. No. CS21-003. \$1 per copy, \$4 per year.

Field Crop Reporting Series. 1973. No. 16. Telegraphic crop report. Canada. Released August 22, 1973. Cat. No. CS22-002. 20¢ per copy, \$4 per series of 20 reports.

Grain Milling Statistics. May, 1973. Cat. No. CS32-003. 10¢ per copy, \$1 per year.

Grain Trade of Canada, 1971-72. Ottawa, 1973. 98p. Tables. Bilingual. Prepared jointly by the Crops Section, Agriculture Division, Economics and Statistics Division. Cat. No. CS22-201/1972. \$1 per copy.

Wheat Review. Vol. 43, No. 11, June, 1973. Cat. No. CS22-005. 30¢ per copy, \$3 per year.

Oilseeds Review. Vol. 3, No. 4, June, 1973. Cat. No. CS22-006. 75¢ per copy, \$3 per year.

Livestock and Animal Products Statistics. 1972. Ottawa, 1973. 89p. Tables, charts. Bilingual. Prepared in the Livestock and Animal Products Section, Agriculture Division. Cat. No. CS23-203/1972. \$1 per copy.

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Selected Meat and Meat Preparations. Vol. 5, No. 6, June 1973. Bilingual. Cat. No. CS32-020. 10¢ per copy, \$1 per year.

Report on Livestock Surveys: Cattle, Sheep, Horses. June 1, 1973. Bilingual. Cat. No. CS23-004. 50¢ per copy, \$1 per year.

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Fruit and Vegetable Crop Reports. 1973. No. 5. Acreage production and farm value of commercial vegetables, 1972. August, 1973. Cat. No. CS22-003. 20¢ per copy, \$1 per year.

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Tobacco Products Industries, 1971. Ottawa, 1973. 15p. Tables. Bilingual. Annual Census of Manufactures. Prepared in the Manufacturing and Primary Industries Division. Cat. No. CS32-225/1971. 50¢ per copy.

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Rural Manitoba - its significance to Manitoba's future; proceedings. Rural Development Conference, Winnipeg, 1973. 65p.

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CORRECTION

Volume 8, Number 4, August 1973

Page 29, column 1, line 44 — "In 1971, the proportion of personable disposable income spent on domestically produced farm foods was 13.4 percent compared with an average 15.9 percent in 1961 (Figure 2)."

**IN REPLY TO AUTHORS AND EDITORS REGARDING OCTOBER 73
CANADIAN FARM ECONOMICS**

I have read the following article(s):

- (1) The Changing Economic Profile of Canada's Beef and Veal Trade
- (2) Growth, Stability and Efficiency of Hog Production in the Prairie Provinces
- (3) Milk Quotas: What Do They Mean?

My comments are on: article number

This article was: not useful 1 2 3 4 5 6 7 8 9 10 very useful.

Because (e.g., The most important economic and social factors were studied. The work was well documented and the conclusions were useful to me).

Beefs Bouquets (Suggestions to authors, publications committee and editors)

My comments may () may not () be used in a future issue of this publication if the editor wishes.

NAME (Please print) Occupation

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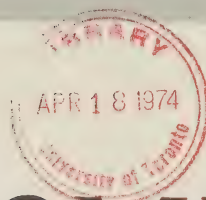
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VOLUME 8

NUMBER 6

DECEMBER 1973

CANADIAN FARM ECONOMICS



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In Reply

HON. EUGENE WHELAN, MINISTER — S.B. WILLIAMS, DEPUTY MINISTER

Canadian Farm Economics is published bi-monthly by the Economics Branch, Canada Department of Agriculture, Sir John Carling Building, Ottawa, and is based on material prepared by economists of the Economics Branch.

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Letters from readers: Letters are encouraged and should be addressed to the author or the Managing Editor. Responses . . . comments, suggestions and points of view are important for effective two-way communications. Letters may be used in the following issue of CFE and will be edited prior to publication where necessary.

OFF-FARM WORK BY OPERATORS OF CANADIAN CENSUS-FARMS - 1971

In 1971, one-half of all Canadian farm operators in the Agriculture Enumerative Survey reported some off-farm work. This ranged from 66 percent of the operators of farms with gross sales of less than \$2,500 to 38 percent of the operators of farms with gross sales of \$25,000 or greater. The average off-farm income from all sources for all operators of census-farms was \$3,000 and for the census-farm operator family, off-farm income averaged \$4,020.



*R.D. Bollman**

INTRODUCTION

In 1971, one-half of Canadian farm operators reported some off-farm work¹. The average off-farm income of operators was \$3,000 and the off-farm income for the operator and his family averaged \$4,020.

This information was obtained by Statistics Canada from the 1972 Agriculture Enumerative Survey (AES) of approximately 6,000 farms. The AES is an annual probability survey using multiframe sampling (a combination of list frames and area segment frames). In this survey, the definition of a census-farm is used to define a farm. The survey is designed to obtain estimates of major crop acreage and livestock numbers, but was not specifically designed for off-farm income statistics. It is enumerated by interviewers in all provinces (except Newfoundland) within two weeks of the reference date of July 1².

Data on off-farm income were required because policy analysts were being forced to consider only agricultural

variables such as prices, yields, and input costs when discussing farm policies and programs. No statistics indicating the total economic situation of the farm operator and his family were available in recent years. Although the results presented in this report are not designed for the analysis of any specific policy, they do provide a necessary background for the design of more relevant policy research.

OPERATOR'S OFF-FARM WORK

An operator was considered to have off-farm work if some off-farm earnings (i.e., wages and salaries or net non-farm self-employment income) were reported. As was expected, the percentage of operators reporting some off-farm work increased as the size of the farm decreased. The survey showed that the percentage operators reporting off-farm work increased from 38 percent of operators of farms with gross sales of \$25,000 or greater to 66 percent of operators with gross sales of less than \$2,500 (Figure 1). Although only 62 percent of the operators in the former group reported no off-farm work, it is more surprising that 34 percent of the operators with gross farm sales of less than \$2,500 reported no off-farm work. (Twenty-five percent of the operators had gross sales of less than \$2,500). In total, 51 percent of the operators reported some off-farm work.

*Ray D. Bollman is an economist with the Agriculture Division, Statistics Canada. He is presently on educational leave at the University of Toronto. This paper is based on a presentation given by Mr. Bollman to the Economics Branch, Agriculture Canada.

¹For definitions of terms used, see Appendix A.

²For further information about AES, contact the Agriculture Division, Statistics Canada, Ottawa, K1A 0L7.

TABLE 1. DISTRIBUTION OF CENSUS FARM OPERATORS' OFF-FARM EARNINGS, CANADA (EXCLUDING NEWFOUNDLAND), 1971

Gross Farm Sales ^b	Total Farms	Operator Off-Farm Earnings ^a			
		Zero	\$1 – 999	\$1,000 – 4,999	\$5,000 & over
		percent			
Less than \$2,500	25	34	10	26	31
\$ 2,500 – 4,999	15	43	15	24	18
\$ 5,000 – 9,999	23	50	15	24	12
\$10,000 – 24,999	26	60	13	18	9
\$25,000 & over	11	62	12	17	9
Total ^c	100	49	13	22	16

^aAll wages and salaries and non-farm self-employment income.

^bGross receipts from the sale of agricultural products by the Census-Farm.

^cTotal may not add due to rounding.

OPERATOR'S OFF-FARM EARNINGS AND OFF-FARM INCOME

How much income did farm operators earn from off-farm work in 1971? For farms with gross sales of less than \$2,500, 31 percent of the operators earned \$5,000 or more from off-farm work (Table 1). In the next largest size class (gross farm sales of \$2,500-\$4,999), only 18 percent of the operators earned \$5,000 or more from off-farm work. In general, as the size of farm (in terms of gross farm sales) increased, the amount of income from off-farm work decreased.

In addition to the operator's off-farm earnings, it is important to consider the operator's total off-farm income. Off-farm income refers to all income that is not net farm self-employment income (i.e., off-farm earnings plus other off-farm income). Thirty-six percent of the operators had off-farm income between one dollar and \$999, 37 percent reported off-farm income in the range

of \$1,000-\$4,999, and 20 percent reported off-farm income of \$5,000 or greater (Table 2). The larger the size of gross farm sales, the smaller the percentage of operators reporting off-farm income of \$5,000 or greater and the greater the percentage of operators reporting off-farm income of one dollar to \$999.

FAMILY OFF-FARM INCOME

Consideration of economic well-being usually concern the entire family. The average off-farm income received by farm operator families was \$4,020 of which \$3,000 was contributed by the operator (Table 3). Wages and salaries constituted 58 percent of the family's off-farm income. The percent distribution in the remaining three classes of net non-farm self-employment income, non-farm income from government sources, and investment income were fairly evenly distributed at 16 percent, 12 percent and 12 percent respectively.

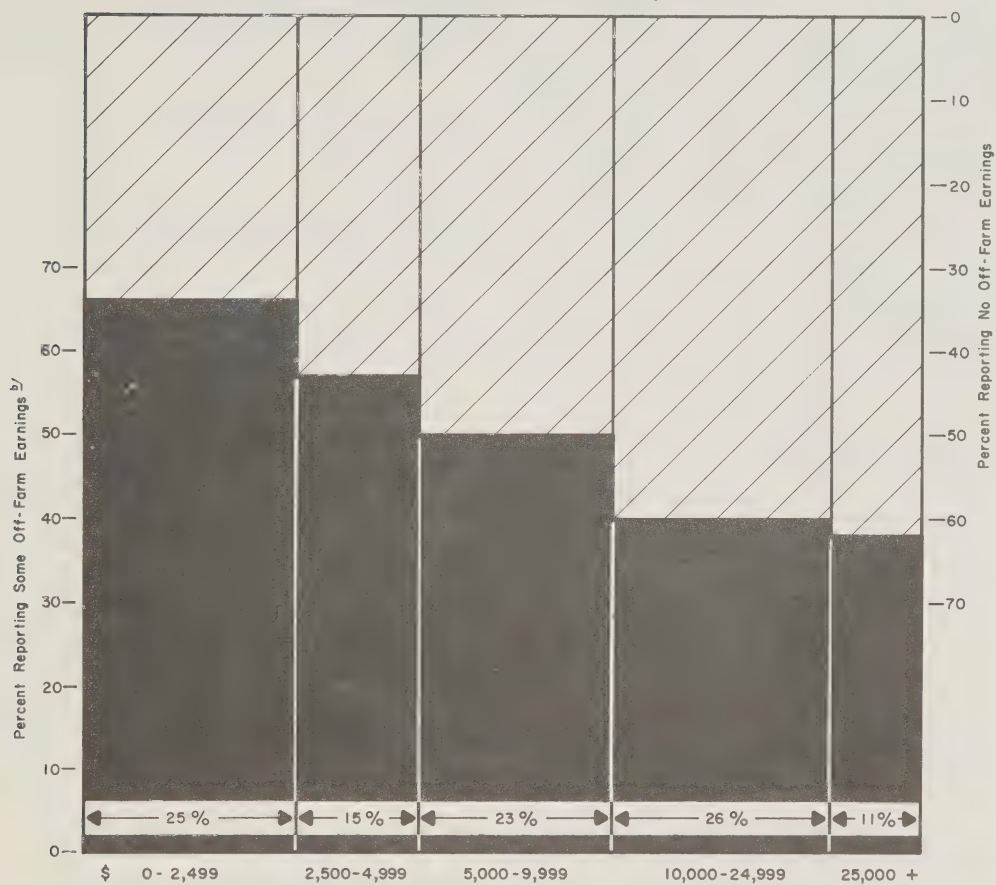
TABLE 2. DISTRIBUTION OF CENSUS-FARM OPERATORS' OFF-FARM INCOME, CANADA (EXCLUDING NEWFOUNDLAND), 1971

Gross Farm Sales ^a	Total Farms	Operator Off-Farm Income			
		Zero	\$1 – 999	\$1,000 – 4,999	\$5,000 & over
		percent			
Less than \$2,500	25	6	17	42	35
\$ 2,500 – 4,999	15	8	34	38	21
\$ 5,000 – 9,999	23	9	38	38	15
\$10,000 – 24,999	26	7	49	32	13
\$25,000 & over	11	6	49	32	13
Total ^b	100	7	36	37	20

^aGross receipts from the sale of agricultural products by the census-farm.

^bTotal may not add due to rounding.

PERCENT OF CENSUS-FARM OPERATORS REPORTING SOME OFF-FARM EARNINGS, BY SIZE OF GROSS FARM SALES, CANADA (NEWFOUNDLAND EXCLUDED), 1971 ^{a/}



^{a/} Width of bar indicates percentage of total farms in that class.

^{b/} Wages and salaries or non-farm self-employment income

Figure 1

TABLE 3. AVERAGE OFF-FARM INCOME, CANADA (EXCLUDING NEWFOUNDLAND), 1971

Source	Family Membership			Total ^b
	Operator	Operator's Spouse	Other Family Members	
	dollars per farm			
Wages and Salaries	1,650	380	320	2,340
Net Non-Farm Self-Employment Income	530	a	a	640
Income from Government Sources	330	a	a	480
Interest, Dividends, Other Investment Income	440	a	a	500
Retirement and Other	a	a	a	60
Total Off-Farm Income ^b	3,000	540	490	4,020
Non-recurring money receipts	a	a	a	170

^aSample is too small for reliable estimate.

^bTotals may not add due to rounding.

The data in Table 2 summarize the distribution of operators with varying dependence on farm and off-farm income; Table 4 presents the same interrelationships for the farm family. In the smallest size class of farms (gross farm sales of less than \$2,500), 56 percent of the families reported less than \$5,000 of off-farm income. As the size of farm increased, the dependence on farm income increased.

SUMMARY AND CONCLUSION

Off-farm work is a predominant feature of the life style of Canadian census-farm operators and off-farm income

would appear to be a significant factor in the operator's total economic situation. Consequently, the distribution of operator's time between farm and off-farm work should be considered when defining a "farmer" for policy purposes. The large percentage (84 percent) of operators with off-farm earnings less than \$5,000 would seem to suggest that considerable research is required into the farm versus off-farm trade-off of returns to the operator's labor. Such analysis is important for predicting the response by farmers to agricultural and non-agricultural economic stimuli. Thus, explicit consideration should be given to off-farm income in the analysis of policies and programs which contribute to the income position of farmers and their families.

TABLE 4. DISTRIBUTION OF CENSUS-FARM OPERATOR FAMILIES' OFF-FARM INCOME, CANADA (EXCLUDING NEWFOUNDLAND), 1971

Gross Farm Sales ^a	Percentage of Total Farms	Family Off-Farm Income			
		Zero	\$1 - 999	\$1,000 - 4,999	\$5,000 & over
		percent			
Less than \$2,500	25	5	14	37	44
\$ 2,500 - 4,999	15	4	27	41	28
\$ 5,000 - 9,999	23	5	32	43	21
\$10,000 - 24,999	26	3	39	40	18
\$25,000 & over	11	2	42	34	22
Total ^b	100	4	29	40	27

^aGross receipts from the sale of agricultural products by the census-farm.

^bTotal may not add due to rounding.

APPENDIX: DEFINITIONS OF TERMS

CENSUS-FARM:an agricultural holding of one acre or more with sales of agricultural products of \$50 or more in the preceding 12-month period.

OPERATOR:the person directly responsible for the agricultural operation of the holding. Note that only one person is designated as the operator of a census farm, even if it is a partnership farm.

FAMILY MEMBERS:all persons related to the operator who live in his/her dwelling, plus children temporarily away at school.

OFF-FARM INCOME:all income that is *not* net farm self-employment income. The components of off-farm income are as follows:

Wages and Salaries: Gross wages and salaries (before deductions such as income tax, Canada or Quebec Pension Plan, unemployment insurance, etc.) from all sources.

Net Non-Farm Self-Employment Income: Net income from an unincorporated business, professional practice or other self-employment enterprise. In the case of a partnership, the respondent reported only his/her share of net income.

Income from Government Sources: All non-farm income from federal, provincial and municipal governments such as family and youth allowances, Canada or Quebec Pension Plan payments, old age pension, old age guaranteed income supplement, unemployment insurance benefits, workmen's compensation payments, war disability pensions, blind or disabled persons' allowances, mothers' allowances and welfare. Note that family allowances were attributed to the farm operator.

Interest, Dividends and Other Investment Income: Includes interest from bank accounts, bonds and saving certificates plus dividends including dividends and profits withdrawn from an incorporated business, net income from roomers and boarders, net rental income including rent of farm land, income from estates or trust funds, and interest from mortgage investments.

Retirement and Other: Includes income which is received as the result of having been a member of a pension plan of one or more employees, income from annuities regardless of who originally purchased the annuity, plus all other income such as royalties, oil rights, alimony and separation allowances received, and non-refundable scholarships and bursaries.

NON-RECURRING MONEY RECEIPTS: not considered to be income. This includes items such as money gifts from outside the family unit, inheritances, lump-sum insurance settlements, income tax refunds and other windfall income.

OFF-FARM EARNINGS: defined to be wages and salaries plus net non-farm self-employment income.

OFF-FARM WORK: signified by the reporting of any off-farm earnings. Note that this survey collects off-farm income for all operators of census-farms. A small number of these operators are hired managers with no net farm self-employment income. On the other hand, some bona fide "farmers" were not enumerated because only one operator was identified for each partnership farm.

GROSS FARM SALES:value of all agricultural products sold by the farm unit during 1971 (whether received by the operator or some other person).

THE ROLE OF THE FEDERAL GOVERNMENT IN EXPORT MARKET DEVELOPMENT



G.A. Hiscocks*

An outward expanding agriculture and food industry based on world market opportunities and international competitiveness could raise and improve the stability of incomes and employment in the Canadian agriculture and food production industry.

INTRODUCTION

Marketing, and particularly exporting, is a complex business and despite the recent continuing emphasis in these areas by farmers and their associated organizations, there is still no really effective system. One problem is that there is a large number of components involved in the process of exporting, as a brief review will readily demonstrate. In addition to the visible activities of farm production, selling, handling, collecting, assembling, grading, marking and packaging, shipping to ports, and delivering to importers overseas, there is a whole range of activities that are not visible.

Information must be collected from markets assembled in Canada, distributed to producers, arrangements made for shipment, insurance, customs clearance, etc., then payments and credit arrangements must be finalized. For

all these activities, there are different groups of people and different organizations. Perhaps the key component is the private individual involved in trade, whether he is a producer, processor, shipper, broker, or trader. But other components are involved in a number of ways.

THE FEDERAL ROLE

In relatively simple terms, the federal role can be viewed as follows:

1. To determine the goals of society in a changing environment;
2. To establish current and future policy on the basis of these goals in accordance with society's wishes;
3. To take the necessary action including coordinating, stimulating, and working with others to see that these goals are achieved.

It is the Federal Government's responsibility to determine the goals for Canadian agriculture in relation to national and regional concerns on the basis of the resources available. This raises the basic question of objectives for agriculture. These have recently been reiterated in a Federal Government publication

*This article is based on a paper presented to the Canadian Agricultural Economics Society at the 53rd A.I.C. Annual Convention, University of Victoria, British Columbia. Dr. Hiscocks is the Director of the Policy Advisory Group, Economics Branch, Agriculture Canada. He is presently attending the National Defence College, Kingston, Ontario. The author acknowledges assistance in the preparation of this paper of work done previously by staff of the Department of Industry, Trade and Commerce, Ottawa and also help by Eric Moore, Market Development Officer, Agriculture Canada.

produced for the Western Economic Opportunities Conference¹ as follows:

1. Expansion of agricultural production, based on competitive advantage and commensurate with the development of domestic and export markets.
2. Promotion of greater stability for the purpose of farm family income maintenance, for furthering competitive advantage through improved continuity of supply, and for facilitating planning and reducing the burdens of uncertainty in financing.
3. Facilitating adjustment to economic and social change to assist farm and rural families to attain their income aspirations by encouraging the expansion of small farm businesses into commercially viable operations and by contributing to the development of rural communities.

THE RATIONALE FOR AGRICULTURAL EXPORT EXPANSION

Within the expansion objective elucidated above, there are two alternatives. One is to concentrate all expansion efforts within Canada on the domestic market. In Canada, there is a steadily growing population with a sustained rate of economic growth including rising average incomes. These features provide a firm basis for larger sales and higher prices for Canadian farmers. Furthermore, the domestic market is totally under Government jurisdiction and the market now held by imports could be captured and in this way, it is claimed, both production and prices could be stabilized. Surely, the thesis runs, this will achieve the specific goals of expansion, income, growth and stability. It is only too clear with current inflationary prices for food on international markets that domestic requirements for some foods are not being met from Canadian sources.

The self-sufficiency argument is tidy, logical and comfortable. Unfortunately, it is naive and does not provide opportunities worthy of Canadian farmers. The expansion in the domestic market will not be sufficient, the product mix does not suit Canadian agricultural capacity, the import replacement market is not very large and Canadian agricultural competitiveness is excellent in a group of products but limited in others.

The alternative approach is an outward expanding agriculture and food industry based on world market

opportunities and international competitiveness. This is not only a tougher challenge, but also it provides a far greater opportunity for larger sales and thus higher incomes. Also, it provides for greater employment through ancillary and associated activities both for rural people and the rest of the economy. This option has been clearly outlined in recent months as well as the opportunities associated with it.²

AGRICULTURAL EXPORT GOALS

Emphasis on exports has been a new approach. A major part of Canadian agriculture was, and still is, built on the basis of an ability and expectation to export. Export objectives play a central role in many commodity sectors.

In general terms, the objective of increasing exports is to raise and improve the stability of incomes and employment in the Canadian agriculture and food production industry by providing and developing opportunities in export markets for expanding output and sales on an economic and sustained basis. More specifically, this involves efforts:

1. to maintain and expand commercial export sales of agricultural and food products;
2. to encourage the agricultural industry in each region to orient its export development activities toward those products which it can supply most efficiently in terms of competitiveness in international markets;
3. to give priority to the development of export markets for those forms of a commodity which make the greatest contribution to sustained growth of producer net income;
4. to treat agricultural and food export development as a coherent system, encompassing domestic production and markets, as well as the investigation, penetration, development and maintenance of markets abroad.

These objectives can be stated more simply as follows:

1. Sell more farm and food products abroad.
2. Encourage each region to do more of what it is good at exporting.

¹ Agriculture, Federal Government, Ottawa, July, 1973, Part II, background paper to Western Economic Opportunities Conference.

² For further elaboration, see W.J. Anderson, *Alternatives in Economic Policy for Canadian Agriculture*, Canadian Farm Economics, Volume 7, No. 2 and G.L. Trant, *Economic Policy Alternatives for Canadian Agriculture*, CAES Meeting, 52nd AIC Convention, P.E.I.

3. Export in the form that is best for the farmer's income now and in the future.

4. Treat the whole process as a system and make it work that way.

WHAT ARE THE SPECIFIC GOVERNMENT ACTIVITIES?

Having set broad goals and then specified export objectives, the Federal Government must face the harder and real life task of achieving the objectives. The tasks fall in several different areas and the rest of this article attempts to list and describe these activities.

The first specific activity is trade policy, and tariff and non-tariff negotiations. Trade policy for agriculture is of course, an integral part of agricultural policy. Without the opening of avenues for trade through multilateral and bilateral negotiations and continuous trade consultation, other trade development work can seldom succeed. This aspect of the process will be the subject of the forthcoming multilateral round of trade negotiations to be held under the auspices of GATT.

The second step is a presence in and information about particular export markets. This is the primary concern of the Trade Commissioner Service which is the overseas commerce field force of the Federal Government. Through its 80 trade offices in 57 countries, it develops and promotes Canada's export trade, acts as an export market consultant, secures production and marketing information and brings together foreign buyers and Canadian sellers. The Federal Government does not have a specific agricultural foreign service, but all important agricultural markets are serviced by trade officers with an agricultural background. Agricultural experience is very extensive among senior officers including the Director-General of the Trade Commissioner Service. Furthermore, there is now a regular secondment of staff from Agriculture Canada into the Trade Commissioner Service for a two to three year tour of duty.

Third, the Department of Industry, Trade and Commerce has established an extensive range of general services to assist those who are expanding into export markets. The Trade Missions Program brings foreign buyers, government officials and technical experts into Canada so that local producers, industrialists, and others can explain production, marketing and business systems and procedures. It also sends Canadian businessmen, marketing officials and government experts to study foreign market requirements, regulations and methods. The Trade Fairs Program enables Canadian exporting

companies to exhibit at nominal cost to business and consumers in foreign markets through an annual program of sponsoring exhibits and practical exhibition assistance. The In-Store Promotion Program enables companies to estimate, at minimum cost, the consumer acceptance or the chance of increasing the rate of acceptance of Canadian products through the distribution channels of foreign countries. Under the Market Identification Program, the Government contributes half the cost of identifying and precisely defining an export market opportunity for a specific commodity for markets outside Canada and the United States.

In a similar fashion, the Government will pay half the cost of adapting a Canadian company's marketing methods to an export market including translation of literature, specialist technical advice and after-sales service under the Market Adjustment Program. The Government will also contribute half an individual company's expenses in participation in trade fairs outside Canada and also at permanent trade centres abroad. To help allow potential foreign buyers to meet Canadian producers, the Government will cover up to half the round trip airfare and a daily allowance. For Canadian industry to take advantage of new scientific and technical advances, there is also a range of programs to stimulate product research, development and innovation including the Industrial Research and Development Incentives Act, the Program for the Advancement of Industrial Technology, the Industrial Design Assistance Program, the General Adjustment Assistance Program, the Program to Enhance Productivity, Counselling Assistance to Small Enterprises and Management Courses. Many of these are of direct value to the agriculture and food industry.

SPECIFIC AGRICULTURAL AND FOOD PROGRAMS

The above programs are generally available not only to the agriculture and food sectors but also to all exports and exporters. In addition, there is a set of programs specifically for the agricultural industry. First, there are three Departmental units active in the agricultural sector - the Market Development Division of the Grain Marketing Office (often called the Grains Group) and the Agriculture, Fisheries and Food Products Branch both of the Department of Industry, Trade and Commerce, and the expanding market development activities of Agriculture Canada. The two Branches of the Department of Industry, Trade and Commerce are responsible for export trade development of grains, other agricultural products and all processed food products. A staff of experienced commodity and program officers cover the

whole range of agricultural and food products, assisting with such market development functions as trade policy market research, preparation and dissemination of market and commercial intelligence, access negotiations, commodity arrangements, promotion and advice.

Working closely with commodity specialists in Agriculture Canada, the two Branches of the Department of Industry, Trade and Commerce operate the Agriculture Market Development Incentives Program. This is the annual \$10 million program shared between grains and oilseeds on the one hand, and livestock and other agriculture and food products on the other; for the latter products, Agriculture Canada has a special responsibility for appraising applications with the Department of Industry, Trade and Commerce. The program offers financial assistance to Canadian companies, agencies, industry associations, producer groups, and universities to undertake market development projects designed to expand markets. The assistance takes the form of loans, grants, or insurance. Under the grain and oilseed program, major starch and protein studies have been made as well as numerous export assistance projects. The most recent developments are the proposals to establish an Oilseed and Grain Product research and development facility at Saskatoon and a new crop development fund. The range of opportunities under this program is very wide. So far, private trade, producer groups and organizations and universities have not made full use of these programs.

There is a heavy concentration of effort on information linked with all these programs. This takes several forms - regular publications of Agriculture Canada and Industry, Trade and Commerce ("Agriculture Abroad" and "Canada Commerce"), trade and commercial intelligence passed directly to trading companies and groups in Canada, the information available at each Trade Commissioner Office and the visits, talks, and discussions of all Federal officers, especially those from the Department of Industry, Trade and Commerce. Because of the vital nature of information, a new Market Intelligence Reporting Service for Agriculture and Food will shortly be established on a regular basis.

Successful exporting starts on each individual farm with the decision to produce the required commodity, in the required grade, and in the required way. Agriculture Canada operates a major national program designed to provide answers to these questions. Its continually expanding Outlook and Markets Information Programs help to indicate to farmers what to produce. Its grading and inspection service covering all commodities (including the Canadian Grain Commission, Production and Marketing Branch and Health of Animals Branch) assures that grades and standards are high. The very large

Research Program (now being reinforced with closer working with economists at headquarters and on the research stations) discovers improved and cheaper ways to produce. More recent steps such as the Farm Products Marketing Council, proposals for improved stabilization, and the New Crop Development Fund³, are all aimed at providing facilities for assisting with exports, largely within Canada. A majority of the Department of Industry, Trade and Commerce programs are directed to or from abroad, whereas Agriculture Canada's programs are concentrated within Canada so that all needs are covered.

Exporting is a complex business and new market development activities are expanding in Agriculture Canada to help producer groups, marketing organizations and others to develop these opportunities. In order to bring the range of programs to people's attention and to help groups get started and expand, staff are available to work directly with producers, marketing boards, etc. These activities aim at stimulating, developing, and organizing with producers, governments and others involved. They provide an essential link between all groups and programs.

A new program has recently been set up to investigate the best means of penetrating specific markets with Canadian products and to assess the volume of Canadian products likely to be required in the future and the probable range of prices and costs. Analysis of demand, supply and strategy will be made both in Canada and in specific export markets.

OTHER PROGRAMS

This very rapid and rather cursory sweep through Government Programs neither does the Federal Government Departments full justice nor does it cover all programs. Within the Department of Industry, Trade and Commerce there are many other Branches and programs, for example, the Office of Area Relations with a host of information on importing countries' rules and regulations affecting imports, the Regional Offices with overseas expertise located in each province and so forth.

LACK OF KNOWLEDGE OF FEDERAL PROGRAMS

From the first step of the broadest goal-setting function to the final step of Export Development Corporation credit insurance for exports (another federal government

³ For these and other new programs see Speech by Hon. Eugene Whelan, at the Western Economic Opportunities Conference, July 26, 1973, Calgary, Alberta.

role associated with IT&C) there is an assumption that the rest of the export system is interested and involved. There is, in my experience, a serious weakness with the current federal programs - a great lack of interchange of ideas. This affects the knowledge of federal programs and of what other agencies and organizations in the export system are doing.

The vast array of Federal Programs has not yet become sufficiently well known to all those who are becoming active in export market development.

During the past year a Federal-Provincial Working Team charged with examining the Agricultural Export Development System discovered at an early stage in its work that there was a serious lack of knowledge about the range and depth of programs. Provincial government officials in particular, had much to learn about federal programs and about programs of other provinces, although federal officials also learned a good deal about provincial initiatives. Moreover, there are many producer groups and marketing boards that are not familiar with these programs. Most universities are not even thinking about them. It is not a question of who is at fault but one of all parts of the system not being familiar enough with what is available and what is going on.

Of all the weaknesses at present, the worst is lack of coordination. There is a lack of coordination at all levels in the industry - between producer groups, commodity groups, provincial governments at different levels, governments and industry, and producers and industry

and governments. The scope for coordination is enormous. The need is vital - without it each group goes its own way doing its own thing, each full of its own needs and urgency. The losses may seem small, and are difficult to measure. However, the ultimate consequence is a weakened bargaining position for all those trying to get the most out of the export market. Yet it is not difficult to have contacts with others working in similar areas or to work together. The lesson from all successful agricultural exporting countries is that coordinated export development pays through larger exports.

SUMMARY AND CONCLUSIONS

Agricultural exports reached record levels in 1972 and promise to do so again in 1973. Yet there are concerns about the future prospects. Those who have examined the opportunities and the capabilities of Canadian agriculture are convinced that the prospects for expansion are excellent **IF** we get together for action. Almost regardless of future trade developments, a substantial increase in market development expenditures by both Federal and Provincial governments can be anticipated. The real question is how Canadian farmers and the Canadian economy can benefit the most? Are we going to win the export markets on our terms or will we let others buy our supplies as and when they wish? Is a full payoff to market development program expenditures to be realized or, through lack of coordination, will major opportunities be missed and our efforts be dissipated in duplication and competitive effort?

THE NUTRITIVE VALUE OF FOOD CONSUMPTION IN CANADA (1949-1971)

Various nutrient consumption changes occur over the years as a result of changes in food supplies, prices, incomes and consumer preferences. Although ample quantities of nutrients may be available from food on a national per capita basis, food is not necessarily consumed by individuals according to nutritional needs.



*D.M. Shute**

INTRODUCTION

Soaring food prices, health food shops, advertising, technology; obesity, heart disease and other physical disorders associated with diet all have contributed to the increasing interest being given to the nutritional intake of Canadians.

The purpose of this paper is to analyze the trends of nutrients per person per day, available for consumption in Canada over the period 1949 to 1971, and the contributions of the various components of the "food basket" to nutrient availability. The results of this study are useful in judging the adequacy of national food supplies and the effects of shifts in dietary requirements on the demand for various foods.

PROCEDURE

Estimation of the daily quantities of each nutrient available for consumption required estimation of the quantities of each food consumed¹ and the nutrient

composition² of each food. Trends in annual per capita food consumption in Canada, in terms of retail weight, were discussed in an earlier article³. Changes in the method of reporting food consumption data over the time period studied required additional estimation procedure for some foods. Cabbage, lettuce and spinach consumption, for example, have been reported individually only since 1958. Previous to this time they were combined into a category "greens" and the nutritive value applied was estimated using the simple average of the nutrient contents of the three vegetables.

The data presented in this report represent supplies of nutrients available for ingestion with the understanding that these quantities do not take into account loss of nutrients in storage and meal preparation or food discard. These types of losses can be substantial, especially for items such as fat and vitamins. They also do not take into consideration the enrichment of

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¹Food consumption estimates used were based on Statistics Canada data published annually in, "Apparent Per Capita Domestic Disappearance of Food in Canada".

²Nutrient composition values for the various foods were obtained from U.S. Department of Agriculture, "Composition of Foods", Agriculture Handbook No. 8, December 1963 and unpublished worksheets of Nutrition Division, Health and Welfare Canada and Agriculture Division of Statistics Canada.

³Shute, D.M., and Yankowsky, Z.J., "Trends in Per Capita Food Consumption in Canada (1949-1971)," Canadian Farm Economics, Vol. 8, No. 2, April 1973.

numerous foods, other than flour and margarine, or the consumption of vitamin and mineral preparations.

In 1953 the addition of iron, thiamine, riboflavin and niacin to flour was permitted. The amount of these nutrients that can be added is prescribed by law, but the amount of flour enriched is not known. The figures in Table 1 are based on the conservative estimate that 75 percent of the flour was enriched.⁴

It must be emphasized that these estimates represent national averages and give no information as to food or nutrient consumption of individuals or groups within the population. Although ample quantities of nutrients may be available from food on a national per capita basis, food is not necessarily consumed by individuals according to nutritional needs. Some may consume too little, others more than enough. Because of this, the usefulness of these data for purposes other than presenting trends is limited.

TRENDS IN FOOD ENERGY AND ENERGY YIELDING NUTRIENTS

Trends in food energy and the energy yielding nutrients, protein, fat and carbohydrates from 1949 to 1971 are shown in Figure 1. Calorie intake from 1949 to 1971 (Table 1) has remained relatively steady with a range between the highest and lowest points during this period of about 207 calories per person per day. Between 1949 and 1969 the range in calories per person per day was only 130. The highest level was in 1971 with consumption at about 3,174 calories and the lowest in 1953 when calories totalled about 2,967. Most of the increase in food energy occurred in the last three years studied. Increases since 1968 have been chiefly due to greater consumption of oils and fats, meat, poultry and a large increase during 1970 and 1971 of pulse and nut commodities. The greater consumption of calories from oils and fats has been a result of the increased consumption of vegetable oils. Calories from meat have increased because of large increases in the consumption of beef and pork.

Although the contribution of cereals to calorie intake has declined since 1949 from 25 percent to about 21 percent (Table 2), they still contribute the largest proportion of calories in the total food basket. Within cereals, wheat flour is the largest contributing factor with about 85 percent of the calorie output from cereals in 1971. The commodity groupings, sugars and fats,

presently contribute 17 percent of the total calories each and meat contributes 15 percent. Beef and pork alone contribute about 92 percent of all calories from meat.

The proportion of calories provided by protein has remained almost constant since 1949 at 11 percent. This has occurred despite an increase in the amount of protein available, from 82.9 grams per capita per day in 1949 to 89.2 grams in 1971. However, a noticeable shift has occurred in protein sources.

In 1949 animal products provided 62 percent of the protein in the diet which increased to 66 percent in 1971. Protein from plant products during the same time period has dropped despite increases in the last two years studied of pulse and nut commodities. This trend may change in the near future with the increasing popularity of mixed animal and vegetable protein products such as soya flour and hamburger.

At present, red meat alone contributes about 25 percent of all protein in the diet. Within the red meat category, beef consumption accounts for about 60 percent of the protein contribution. In 1949 cereal and dairy products provided the largest amounts of protein, contributing about 27 percent each.

Of the energy yielding nutrients, fat has shown the largest increase, from about 126 grams per capita per day to 143 grams, an increase of 14 percent. In 1949, fat comprised about 38 percent of the calories consumed. Fat presently makes up about 41 percent of the calories. It is not likely though that all of the fat in the food supply is eaten. No estimate is available, for example, on how much fat is trimmed from meats or discarded after cooking. The large increase of fat in the food basket is due mainly to the increased use of oils and fats,⁵ meat and poultry. Increased oil and fat consumption has been a result of the greater use of margarine, shortening, salad and cooking oils.

The contribution of vegetable fats to total oil and fat consumption has increased from about 37 percent in 1949 to 58 percent in 1971. The contribution of butter and lard during the same time period dropped from 63 percent to 42 percent. Meat and poultry provided about 39 grams of fat per capita per day in 1949 and about 53 grams in 1971.

The amount of carbohydrate available has shown little change since 1949, but a downward trend is evident. The percentage of calories contributed by carbohydrates has

⁴Nutrition Division, Department of National Health and Welfare, "Canadian Food and Nutrition Statistics 1935 to 1965", Canadian Nutrition Notes, Vol. 25, No. 10, 1969.

⁵Margarine, lard, shortening, butter, other oils and fats.

CONSUMPTION PER CAPITA PER DAY OF FOOD ENERGY. PROTEIN, FAT AND CARBOHYDRATE.



FIGURE 1

TABLE 1. ESTIMATED SUPPLIES OF ENERGY AND NUTRIENTS IN FOODS AVAILABLE FOR CONSUMPTION BY CANADIANS PER PERSON PER DAY, 1949-1971

	Energy	Protein	Fats	Carbo- Hydrates	Ca	P	Iron	Vit A	Thiamine	Ribo- flavin	Niacin	Vit. C
	Calories	Gm	Gm	Gm	Mg	Mg	Mg	I.U.	Mg	Mg	Mg	Mg
1949	3007.2	82.9	126.0	392.1	989.9	1379.4	11.6	6899.7	1.1	2.0	16.8	100.9
1950	3063.2	83.8	126.0	405.1	1007.5	1402.2	11.7	7254.6	1.2	2.0	16.6	105.6
1951	2989.6	83.2	124.1	393.9	1005.5	1388.9	11.6	7156.9	1.2	1.9	16.3	105.0
1952	3010.9	84.2	125.2	391.8	1006.2	1396.4	11.9	7174.7	1.2	2.0	16.9	110.3
1953	2966.5	85.2	124.0	386.4	1025.5	1420.0	12.0	7149.8	1.2	2.0	17.2	112.5
1954	2976.2	84.6	124.4	384.9	1025.2	1420.3	11.9	7250.0	1.1	2.0	17.2	110.6
1955	3004.9	86.4	125.6	387.1	1045.1	1440.7	15.9	7362.6	1.8	2.4	22.2	114.2
1956	3051.7	87.8	127.5	394.8	1048.8	1458.6	16.3	7374.1	1.8	2.4	22.9	112.6
1957	2968.8	86.6	125.1	380.1	1054.5	1454.5	16.1	7348.5	1.8	2.4	21.4	113.6
1958	3022.3	86.4	125.5	392.5	1044.7	1450.7	15.7	6856.2	1.8	2.3	22.7	99.1
1959	3027.7	85.6	124.8	387.6	1035.1	1437.4	15.5	6700.9	1.8	2.3	22.6	103.4
1960	2999.3	85.6	127.3	384.5	1022.2	1431.7	15.6	6985.7	1.8	2.3	22.6	105.4
1961	2979.7	85.0	124.8	385.5	1019.1	1422.6	15.5	6820.6	1.8	2.3	22.5	102.2
1962	2983.3	83.8	127.2	383.4	983.6	1396.8	15.3	6862.8	1.8	2.2	23.0	100.9
1963	3001.9	85.6	128.0	383.8	988.2	1412.3	15.5	6347.0	1.8	2.3	23.3	95.6
1964	2986.3	84.9	129.3	377.3	976.2	1480.5	15.3	6411.0	1.7	2.2	22.6	91.9
1965	3076.7	88.2	127.6	400.2	974.3	1422.2	16.1	6504.3	1.8	2.4	23.8	97.1
1966	3097.1	87.1	131.7	400.4	995.3	1435.3	16.1	6683.3	1.8	2.2	23.3	101.7
1967	3081.1	87.2	134.2	389.0	964.0	1423.9	16.0	6711.5	1.8	2.2	24.0	101.7
1968	3096.5	86.8	135.3	390.9	970.4	1435.1	16.1	6277.9	1.8	2.2	24.1	98.8
1969	3139.1	88.4	137.8	393.1	996.6	1444.7	16.0	6410.0	1.8	2.2	24.0	95.8
1970	3141.3	88.4	140.1	390.3	947.2	1424.6	16.4	6637.6	1.8	2.2	24.2	97.2
1971	3173.7	89.2	143.2	391.1	934.0	1437.0	16.5	6821.4	1.9	2.2	24.4	98.0

SOURCE: Based on Statistics Canada Data

dropped during the time period studied from 52 to 49 percent. The downward trend for carbohydrates in the food supply reflects primarily a decrease in the use of grain products. In 1949 grains provided 159 grams of carbohydrate per capita per day which decreased to 138 grams in 1971. Since 1949, grains and sugars together have provided over 70 percent of the total carbohydrate consumption. However, shifts in the consumption of these foods over the 23 years studied have affected the type of carbohydrate in the food basket. In 1949, 41 percent of the carbohydrate was starch and about 35 percent was sugar. By 1971, both forms of carbohydrates were contributing about 35 percent each, to the total amount.

MINERAL TRENDS

Decreased consumption of dairy products has resulted in a downward trend for the nutrient, calcium. The increased consumption of low fat fluid milk and cheese did not make up the decrease in consumption of fluid whole milk. In 1949 fluid milk provided about 75 percent of the total calcium contributed by dairy products. By 1971 this figure had dropped to about 60 percent. Cheese, other than cheddar or processed,

showed the greatest increase in contribution to calcium, increasing to 25.8 milligrams in 1971 from 3.3 milligrams in 1949. Although the percentage contribution of dairy products to calcium intake is declining they still provide about 75 percent of all calcium available for consumption.

Dairy products also make the largest contribution to phosphorus intake, contributing about 39 percent in 1971. Although phosphorus provided by dairy products has been declining, the trend for phosphorus is upward. This is a result of increased consumption of pulse and nut commodities, meat and poultry.

The level of iron in the food basket is at present the highest it has been since 1949. The enrichment of cereals and increased consumption of meat have caused this. In 1949, before the enrichment of cereals, meat proved to be the best source of iron, contributing about 26 percent. By 1971 the contribution of meat to iron consumption had dropped to about 22 percent and the contribution of cereals was about 32 percent. Within these groups, wheat flour provides about 85 percent of the iron contributed by cereals, and beef provides about 54 percent of the iron contributed by meat.

TABLE 2. PERCENTAGE CONTRIBUTION OF FOOD GROUPS TO TOTAL CALORIES AND NUTRIENTS AVAILABLE FOR CONSUMPTION BY CANADIANS PER PERSON PER DAY, 1949 AND 1971.

	CALORIES		PROTEIN		FAT		CARBOHYDRATE		CALCIUM		PHOSPHORUS	
	1949	1971	1949	1971	1949	1971	1949	1971	1949	1971	1949	1971
Cereals	25.4	20.8	26.8	21.2	2.1	1.5	40.6	35.4	4.2	3.9	15.2	12.2
Sugars & Syrups	17.5	17.1	a	a	—	—	34.7	35.9	1.6	1.6	a	a
Pulses & Nuts	1.8	2.9	3.5	5.4	2.3	3.6	1.5	2.4	1.4	2.4	4.0	6.6
Fruit	2.8	4.1	1.9	1.9	a	a	5.2	8.5	3.3	3.5	3.1	3.2
Vegetables	4.9	5.3	5.8	5.8	a	a	8.5	9.5	4.6	5.0	8.5	9.2
Oils & Fats	16.8	17.0	a	a	45.1	42.4	a	a	a	a	a	a
Meat	12.5	15.2	21.7	25.4	26.3	29.6	a	a	1.1	1.4	12.3	14.6
Poultry	1.0	2.6	2.8	7.4	1.8	4.2	a	a	a	a	1.5	3.7
Eggs	1.7	1.8	4.9	5.2	2.9	2.9	a	a	1.7	2.1	4.7	5.1
Fish	.9	.6	4.6	3.1	—	—	a	a	1.7	1.3	3.1	2.3
Dairy Products	13.7	11.7	27.7	24.3	17.7	14.2	7.6	6.7	77.7	75.5	44.3	39.4
Beverages	.8	.7	—	—	—	—	1.6	1.6	1.7	2.2	2.5	3.0

	IRON		VITAMIN A		THIAMINE		RIBOFLAVIN		NIACIN		VITAMIN C	
	1949	1971	1949	1971	1949	1971	1949	1971	1949	1971	1949	1971
Cereals	20.7	31.5	a	a	16.4	40.0	6.0	20.0	13.7	25.0	—	—
Sugars & Syrups	5.7	4.7	—	—	a	a	a	a	a	a	a	a
Pulses & Nuts	6.6	7.8	a	a	6.4	5.3	2.0	2.3	3.9	6.1	a	a
Fruit	8.6	7.9	10.7	12.4	8.2	6.9	3.0	3.6	4.2	3.8	39.1	43.1
Vegetables	15.5	11.5	39.0	41.6	20.0	13.3	6.5	5.9	17.3	12.7	53.4	50.7
Oils & Fats	—	—	17.3	15.0	—	—	—	—	—	—	1.0	a
Meat	25.9	22.4	13.9	11.9	30.0	21.0	15.0	15.4	29.8	24.2	—	—
Poultry	—	1.4	—	—	1.0	1.1	1.0	1.8	4.9	8.5	—	—
Eggs	6.4	5.0	5.5	6.2	2.7	2.1	5.0	5.0	a	a	—	—
Fish	2.0	1.1	a	a	1.3	a	1.5	a	4.8	2.6	a	a
Dairy Products	2.8	2.5	13.2	12.2	17.3	8.9	55.0	40.9	2.1	1.6	6.2	5.1
Beverages	4.9	4.2	—	—	—	—	3.0	2.3	19.0	15.7	—	—

SOURCE: Based on Statistics Canada Data.

^aLess than one percent.

VITAMIN TRENDS

The trend for Vitamin A since 1949 has been slightly downward. This has been a result of the decreased consumption of offal⁶, butter and fluid whole milk. Offal accounts for about 98 percent of all Vitamin A contributed by meats. The consumption of offal has declined almost consistently since 1949. Butter provided over 80 percent of the Vitamin A contributed by oils and fats in 1949, but now provides just over 60 percent. Because of the fortification of margarine with Vitamin A, the decrease in Vitamin A provided by oils and fats has not been drastic. Margarine, while providing about 19 percent of the Vitamin A contributed by oils and fats in 1949, now provides about 37 percent. Fruits and vegetables together provide about 54 percent of the Vitamin A in the food basket. A large increase in Vitamin A provided by vegetables has been the result of increased fresh carrot consumption.

Thiamine and niacin have increased as a result of increased meat consumption and the enrichment of

cereal products. In 1949 meat products provided more thiamine and niacin than cereal products. Since that time, enrichment has made cereals the greatest contributor. In 1971, cereals provided 40 percent of the thiamine in the food basket and meat provided 21 percent. At the same time cereals provided 25 percent of the niacin in the food basket and meat provided about 24 percent. Pork alone provides over 70 percent of all the thiamine contributed by meats. In 1971, beef provided about 56 percent of the niacin provided by meats with pork contributing about 25 percent. The amount of niacin provided by poultry has increased considerably since 1949. At that time poultry provided .84 milligrams of niacin per capita per day. By 1971 poultry was contributing 2.1 milligrams of niacin per capita per day, an increase of about 150 percent.

Riboflavin has increased during the time period studied, but not to as great a degree as thiamine or niacin. The largest contributing food group to riboflavin is the dairy product group which has decreased its contribution since 1949 from about 55 percent to 41 percent. Some of this loss was made up by the enrichment of cereal products.

⁶Refers to tail, kidneys, heart, tongue, liver, etc.

Their contribution to riboflavin intake in 1971 was about 20 percent. Even though the consumption of meats has risen since 1949, their contribution to riboflavin intake has remained about the same. Within the meat group, offal provided about 43 percent of the riboflavin in 1949 and beef provided almost 27 percent. The consumption of offal has declined while the consumption of beef has risen so that now offal provides about 32 percent of the riboflavin and beef about 38 percent. The decreased consumption of offal has tended to keep the contribution of meats to riboflavin intake at about the same level.

Since 1949, fruits and vegetables have provided over 90 percent of the Vitamin C in the food basket. Potatoes supplied the largest share, providing about 66 percent of all Vitamin C contributed by vegetables in 1971 and about 33 percent of all Vitamin C in the food basket. In 1971, fresh citrus fruits contributed about 25 percent of the Vitamin C provided by fruits and about 11 percent of all Vitamin C in the food basket. The contribution of vegetables to Vitamin C intake has dropped since 1949 from about 53 percent to 51 percent. The contribution of fruit to Vitamin C intake increased during the time period studied from 39 percent to about 43 percent. The amount of Vitamin C contributed by canned fruits and vegetables since 1949 has been increasing while that provided by fresh fruits and vegetables has been decreasing.

SUMMARY AND CONCLUSIONS

Various nutrient consumption changes occur during the years as a result of changes in food supplies, prices, incomes and consumer preferences.

Cereals presently contribute about 21 percent of the energy, 21 percent of the protein, 32 percent of the iron, 40 percent of the thiamine, 20 percent of the riboflavin and about 25 percent of the niacin in the diet. Over the period studied, however, cereal consumption decreased. As cereals are primarily an energy producing food, one of the reasons for the decrease may have been the desire of consumers to reduce calorie intake. Also, consumption of many cereal products may have been associated with low incomes and restricted budgeting. The caloric value of the Canadian food basket, however, has remained fairly constant over the same period. The loss from cereals has been compensated by increases in meat, poultry and fats. Modern attempts at improving the presentation of cereals have done much to remove the low budget image but they have not curbed the decrease in cereal consumption.

The chief nutrient contributions of fruits and vegetables in the average Canadian diet are Vitamins A and C. They provide 54 percent of the Vitamin A and about 94 percent of the Vitamin C. In addition, they provide about 20 percent of the thiamine, 19 percent of the iron, 16 percent of the niacin, but only 9 percent of the calories. These figures must be interpreted with caution as they are based on foods available and purchased at the retail level. No account is taken of what happens to them at home. Handling, storage, processing, home preparation and cooking each have an effect on the nutrient composition. Vitamin C is readily destroyed by heat, light, air and metals; riboflavin and thiamine are easily destroyed, but niacin is more stable⁷. A fair amount of these nutrients are discarded in the cooking water. Vitamin A is more stable than the water soluble nutrients. Minerals are not destroyed by heating, but are also water soluble. Many of the fruits though provide a year round source of Vitamin C and require no cooking.

The meat and fish group⁸, provide about 41 percent of the protein available in the Canadian food basket. In addition to protein, this group contributes 36 percent of the niacin, 30 percent of the iron, 22 percent of the riboflavin and 18 percent of the Vitamin A in our diet. Within the group, beef provides about 40 percent of the iron and about 38 percent of the niacin, pork provides about 61 percent of the thiamine and offal provides about 63 percent of the Vitamin A.

The fact that poultry and fish do not appear to contribute much in the way of nutrients is not a reflection of their nutritive value but rather of the small amount eaten. The trend for poultry and egg consumption is up though, and the contribution of this group to niacin and iron intake is significant.

In the Canadian food basket, dairy products provide about 24 percent of the protein, 75 percent of the calcium, 39 percent of the phosphorus, 41 percent of the riboflavin and lesser amounts of other nutrients. Milk alone contributes 14 percent of the protein, 45 percent of the calcium, 23 percent of the phosphorus and 28 percent of the riboflavin in the diet. Despite its important contributions to nutrient intake the consumption of milk has been declining. Increases in the consumption of cheese and low fat milk have not at present made up for decreases in the nutrients supplied by milk.

⁷Nutrition Division Department of National Health and Welfare, "Fruits and Vegetables", Canadian Nutrition Notes, Vol. 26, No. 6, 1970.

⁸Includes red meat, poultry, eggs and fish.

Nutrient Trends and Nutrient Requirements

The quantities of energy, minerals and vitamins required for good health depend on the characteristics of an individual such as age, sex, and the amount of physical activity in which that person engages. Although tables are readily available which indicate recommended levels of nutrient intake for persons of specific characteristics, estimation of an average per capita per day nutrient requirement for Canadians was not attempted in this study. Rough estimates by the United Nations Food and Agriculture Organization indicate that more than enough nutrients are available from the food supply in Canada and other developed western Nations to meet nutritional requirements. The Nutrition Division of Health and Welfare Canada agrees with this estimate⁹.

Although the amount of food available is more than adequate to provide sufficient nutrients for all Cana-

dians, results of the recent survey by Nutrition Canada clearly indicate that many Canadians are not consuming a nutritionally adequate diet. Deficiencies were observed among all sectors of the population including those with high incomes.

The question of whether deficiencies observed in the survey in nutrients such as calcium and riboflavin are associated with the decreasing trend in consumption of fluid milk, the largest contributor to both of these nutrients, or are associated with some other factors warrants further study.

Whether Canadians are eating better or worse now than they were twenty years ago is difficult to say because of the general nature of the data on trends. Such a conclusion would require more detailed data on individual consumption. In addition to the purposes outlined above, analysis of broad trends in food and nutrient consumption of the type reported in this study provide a useful background for the detailed analyses of nutritional levels, such as the study being done by Nutrition Canada.

⁹Nutrition Division, Department of National Health and Welfare, "Nutrient Intakes Recommended for Canadians", Canadian Nutrition Notes, Vol. 20, No. 3, 1964, Revised 1968.

POLICY AND PROGRAM DEVELOPMENTS

AGRICULTURAL PRODUCTS CO-OPERATIVE MARKETING ACT

(Final Payments to Ontario Bean Producers)

Under the recommendation of the Minister of Agriculture, final payments by the Ontario Bean Producers' Marketing Board to primary producers of pea beans and yellow-eye beans has been approved. (13 November 1973)

CROP INSURANCE ACT

(Amendment for British Columbia)

The Agreement for the operation of a crop insurance program in the Province of British Columbia has been amended to include an additional hail benefit for tree fruits. (13 November 1973)

(Amendment for Prince Edward Island)

The Agreement with Prince Edward Island for Crop Insurance has been amended to provide insurance coverage for tobacco for the 1971-72 crop year; for the 1972-73 crop year, the Agreement has been amended to provide insurance coverage for peas, broccoli, cauliflower, brussels sprouts and strawberry plants, and to include changes in benefits, coverage and premium rates for spring grains and potatoes. (6 November 1973)

1973 FARM TAX REDUCTION PROGRAM IN ONTARIO

The Program is aimed at relieving the municipal tax burden on lands used actively for farming purposes and farms that will remain in agricultural production in the future. It is not intended to provide relief for lands being held for speculative or development purposes or for properties being kept out of production for other reasons. The most significant change in the 1973 program is the increase in the rate of Farm Tax Rebate from 25 percent to 50 percent.

Application forms will be mailed to all owners of property in Ontario assessed as "Farm", without regard to the size of the property. To qualify for the Farm Tax Rebate, the applicant will be required to complete and return this application form describing the main farming enterprise, certifying that at least 50 percent of the 1973 Municipal Taxes have been paid, and demonstrating that the current farm operations will generate at least \$2,000 in annual income.

NEW BRUNSWICK AND PRINCE EDWARD ISLAND MILK PRICE AGREEMENT

An agreement has been reached with the New Brunswick and Prince Edward Island governments to contain and roll back fluid milk prices to the consumer.

The price of fluid milk in New Brunswick has been reduced by three cents a quart, effective December 1. In Prince Edward Island the price has been reduced by five cents a quart, effective December 10, 1973.

AGRICULTURAL PRODUCTS MARKETING ACT

(Amendment to Milk Marketing Levies Order for Alberta, Ontario, Prince Edward Island and Quebec)

"Every producer who sells or delivers milk to a plant shall pay to the Board, in addition to the contribution that he pays pursuant to the Plan, levies at the rate of 10 cents for each 100 pounds of milk or \$0.0285 for each pound of butterfat sold or delivered by him to a plant that is not in excess of the quota fixed and allotted to him.

Every producer who sells or delivers milk to a plant shall pay to the Board, in addition to the contribution that he pays pursuant to the Plan, levies at the rate of \$2.06 for each 100 pounds of milk or \$0.5886 for each pound of butterfat sold or delivered by him to a plant that is in excess of the quota fixed and allotted to him.

Every producer who sells or delivers cream to a plant shall pay to the Board, in addition to the contribution that he pays pursuant to the Plan, levies at the rate of 38 cents for each pound of butterfat sold or delivered by him to a plant that is in excess of the quota fixed and allotted to him."

CANADIAN WHEAT BOARD ACT

(Canadian Wheat Board Regulations, Amendment)

The *Canadian Wheat Board Regulations* are amended by adding thereto, immediately after section 15 the following section:

"15.1 (1) Permission is hereby granted to any person who is not a public carrier and who resides or carries on

business within any of the Provinces of Manitoba, Saskatchewan and Alberta to transport or cause to be transported, before August 1, 1974.

(a) wheat, oats or barley that is not described by a grade name or by reference to a sample taken pursuant to the *Canada Grain Act*, or

(b) wheat products, oat products or barley products, inter-provincially within the area comprised by those Provinces.

(2) Permission is hereby granted to any person who resides or carries on business within any of the Provinces of Manitoba, Saskatchewan and Alberta to sell, agree to sell, buy or agree to buy, before August 1, 1974, wheat, oats or barley or wheat products, oat products or barley products situated in any of those Provinces for delivery in any of those Provinces."

FINANCIAL ADMINISTRATION ACT

(Citrus Fruit Juice Concentrates Remission Order)

Remission is "granted of all customs duties paid under the *Customs Tariff* on citrus fruit juice concentrates, pulp, aromas and essential oils or essences that were imported into Canada for use in the production of packaged citrus fruit juices and that

(a) on February 19, 1973 were held in inventory; or

(b) were processed and on February 19, 1973 were held in a processed form in inventory by the processors."

(21 August 1973)

LIVESTOCK FEED ASSISTANCE ACT

(Feed Grain (B.C.) Transportation Assistance Regulations, 1973)

The Canadian Livestock Feed Board may, in addition to payments authorized by the *Feed Grain Transportation and Storage Assistance Regulations*, make payments to or for the benefit of livestock feeders in British Columbia in amounts equal to the difference between

(a) the actual transportation costs of feed grain transported during the period commencing September 16, 1973 and terminating December 31, 1973 to livestock feeders in British Columbia; and

(b) the transportation costs that would have been incurred if that feed grain had been transported under the least expensive transportation route normally available.

Every payment shall be made under the following conditions:

(a) the person who receives the payment shall

(i) keep books of account, records, bills of lading and sales invoices respecting the purchase and sale of feed grain,

(ii) retain all such books of account, records, bills of lading and sales invoices for six years,

(iii) make all such books of account, records, bills of lading and sales invoices available for inspection and audit by an authorized representative of the Canadian Livestock Feed Board during normal business hours; and

(b) the feed grain has been or will be fed to livestock in the area of the destination in respect of which the payment is made.

(16 October 1973)

PUBLICATIONS

ECONOMICS BRANCH PUBLICATIONS

Available from the Economics Communication Unit, Agriculture Canada, Ottawa, K1A 0C5

A Working Paper on Beef Cattle Production in Quebec - General Comments. A federal employment stimulation project. December 1973. Tables. 7p. Publ. No. 73/19. Free.

Structural and Technological Change in the Dairy Industry. R.K. Sahi. June 1973. 130p. Tables, charts. Publ. No. 73/21. Free.

AGRICULTURE CANADA PUBLICATIONS

Available from the Information Division, Agriculture Canada, Ottawa, K1A 0C5

Federal Farm Credit and Related Statistics, 1973. Farm Credit Corporation. Charts, tables. 68p.

The Metric System for Farmers. Ottawa, 1973. Illus., tables. Cat. No. A15-1496. Free.

Other Agriculture Canada publications are listed in Publications, prepared by the Information Division, Agriculture Canada, Ottawa.

STATISTICS CANADA PUBLICATIONS

Available from the Publications Distribution Unit, Statistics Canada, Ottawa, K1A 0T7

Census of Canada, 4.1.1. Agriculture: Canada. 1971. Bulletin. Bilingual. Prepared in the Census Division. Ottawa, 1973. Various paging. Tables, map. Cat. No. CS96-701. \$2 per copy.

Stocks of Fruit and Vegetables. Vol. 37, No. 10, October 1, 1972. Bilingual. Cat. No. CS32-010. 30¢ per copy, \$3 per year.

Retail Prices and Living Costs: Canadian Inter-city Retail Price Comparisons as of August, 1973. Vol. 2, No. 13, November 1973. Bilingual. Cat. No. CS62-005. \$2 per year.

Farm Wages In Canada. August, 1973. Bilingual. Cat. No. CS21-002. 25¢ per copy, 75¢ per year.

Quarterly Bulletin of Agricultural Statistics. Vol. 66, No. 2. April-June 1973. Bilingual. Cat. No. CS21-003. \$1 per copy, \$4 per year.

Farm Cash Receipts. Vol. 34, No. 8, August 1973. Bilingual. Cat. No. CS21-001. 20¢ per copy, \$2 per year.

Farm Implement and Equipment Sales. Vol. 15, No. 8. January 1 to August 31, 1973. Bilingual. Cat. No. CS63-009. 10¢ per copy, \$1 per year.

Selected Dairy By-products. Production and inventory of process cheeses. Vol. 2, No. 30, August 1973. Bilingual. Cat. No. CS32-024. \$1 per year.

Fluid Milk Sales. Vol. 27, No. 8, August 1973. Bilingual. Cat. No. CS13-002. Free.

Stocks of Dairy and Frozen Poultry Products. Vol. 56, No. 10, October, 1973. Bilingual. Cat. No. CS32-009. 20¢ per copy, \$2 per year.

Shipments of Prepared Stocks and Poultry Feeds. Vol. 27, No. 8, August, 1973. Bilingual. Cat. No. CS32-004. 20¢ per copy, \$2 per year.

Poultry Processors, 1971. Canada, 1973. 8p. Tables. Bilingual (Annual Census of Manufactures). Prepared in the Manufacturing and Primary Industries Division. Cat. No. CS32-227/1971. 50¢ per copy.

Selected Meat and Meat Preparations. Vol. 5, No. 7, July 1973. Bilingual. Cat. No. CS32-020. 10¢ per copy, \$1 per year.

Stocks of Frozen Meat Products. Vol. 56, No. 10, October, 1973. Bilingual. Cat. No. CS32-012. 30¢ per copy, \$3 per year.

OTHER PUBLICATIONS

Ontario's Co-operatives 1971-1972. A survey of Co-operative Business Organizations. Economics Branch, Ministry of Agriculture and Food, with the collaboration of The School of Agricultural Economics and Extension Education, University of Guelph Ontario and The Economics Branch, Agriculture Canada, Ottawa. 66p. Map, tables, graphs and flow chart.

Wage and Price Controls in Britain. David C. Smith. August 1973. 30p. Available from Food Prices Review

Board, P.O. Box 1540, Station B, Ottawa, Ontario, K1A 5Z5.

The Economics of Peach Production; Production Costs, Returns, and Management Practices in the Niagara Peninsula, 1972. E.D. McKibbin. Toronto, Economics Branch, Ontario Ministry of Agriculture and Food, 1973. 20p. Illus.

The Economics of Tart Cherry Production; Production Costs, Returns, and Management Practices in the Niagara Peninsula, 1972. E.D. McKibbin. Toronto, Economics Branch, Ontario Ministry of Agriculture and Food, 1973. 18p. Illus.

Industrial Assistance Programs in Canada: Interpretation, Law and Regulations. Prepared by CCH in cooperation with Peter E. McQuillan and Paul G. Donaldson, 2d ed. Don Mills, Ontario, 1972, 256p. Illus.

An Aggregate Econometric Model of Canadian Agriculture. S.N. Kulshreshtha and V. Holub. Department of Agricultural Economics, University of Saskatchewan, Saskatoon. October 1973. 101p. Flow charts, graphs and tables. Technical Bulletin BL:73-10.

An Economic Analysis of Farm Truck Ownership, Utilization, and Cost of Hauling Grain in Saskatchewan. S.N. Kulshreshtha. Department of Agricultural Economics, University of Saskatchewan, Saskatoon. August 1973. 271p. Tables, graphs. RR:73-09.

The Banks' Role in Farm Financing. The Canadian Bankers' Association. Vol. 16, No. 3, October 1973. Available from the Public Relations Department, the Canadian Bankers' Association, P.O. Box 282, Toronto Dominion Centre, Toronto M5K 1K2.

Review of the Agricultural Situation in Europe at the End of 1972, Volume II, Dairy Products and Eggs. Economic Commission for Europe. Annual Agricultural Market Review No. 15. United Nations. New York, 1973. 299p. Tables. ECE/AGR1/3.

Recent Developments of Agricultural Trade in Europe. Agricultural Trade Review No. 10. Economic Commission for Europe. United Nations, New York, 1973. 37p. Tables.

Monthly Bulletin of Agricultural Economics and Statistics. Vol. 22, No. 7/8, July/August 1973. Food and Agriculture Organization of the United Nations, Rome.

Farm Improvement Loans Act. Annual report, 1972. Ottawa 1973. 16p. Tables. Bilingual. Published by Environment Canada, Finance. Cat. No. F1-4/1972. Free.

Crop Insurance Act. An Act to amend. As passed, September 12, 1973. 2p. Parliamentary Publication. House of Commons. Cat. No. XB291-219/3. 15¢ per copy.

IN REPLY

The view of the reader is an essential part of effective publishing. I believe editors and authors must have the views from at least some readers in order to obtain reader reaction, and to provide more relevant articles in the most acceptable way.

We are grateful to the readers who take the time and the bother to reply.

This section of the publication is still evolving and we have been unable to present these letters in earlier issues. Thus, there is a relatively large batch of letters in this issue. Although these are not all of the replies we have received, they are representative of most of them.

Dr. V.D. Trello, a chemist from Candiac, Quebec, who plans to start farming, says the articles in the June '72 issue were very useful to him and adds that he would be interested in studies done on the use of sewerage sludge as a soil fertilizer.

You have received my letter and reports from the Department of the Environment and your suggestions have been forwarded to certain economists. - Managing Editor.

Professors C.M. Williams of the University of Saskatchewan, and Ray Billingsley of Texas University, write that the publication is of use to them. Dr. Williams says the information on Farm-Food Marketing Costs in the August '73 issue is most useful in presenting undergraduate and farm lectures and the information on policy development is very helpful.

Thanks to both of you. As a senior agricultural researcher - extension worker and Fellow of the Agricultural Institute of Canada, we are indeed pleased Dr. Williams, to learn that you are making use of this publication on a regular basis. - Managing Editor.

Tom Brown, the District Agriculturalist from Stony Plain, Alberta, says the information in the Farm-Food Marketing Costs article was useful for agriculture week in creating awareness among consumers. He says he would like to see an article on producers' use of marketing reports in deciding when to sell, where to buy and sell, and what weights to shoot for, for feeder cattle.

Your suggestions will be brought to the attention of economists dealing with the subject. - Managing Editor.

Bill Wilson, a Farmer-Agrologist from Carlyle, Saskatchewan, writes to congratulate Mr. Weins and Mr. Lodge

for their practical research on some Economic Aspects of Delayed Grazing on Native Pastures in the June '73 issue. "The information indicates that it would definitely pay to provide an alternative source of feed for a period in the spring." Mr. Wilson says that this type of information is very useful to livestock producers.

Pierre Sauriol, an Agronomist from St-Remi, Napierville, Quebec, who is employed in the market-gardening industry, suggests an article on economic data of the market-gardening industry.

We will keep this in mind. - Managing Editor.

L.G. Reeds, Geography professor, MacMaster University, Hamilton, says the work on the article on the Structure of the Canadian Manufacturing Milk and Cream Production Industry in the April 1973 issue was well documented. However, he says "I would like to have seen actual correlation between age and herd size and education and income in addition to the conclusions presented in the article."

Your suggestions have been noted and forwarded to the appropriate authors. - Managing Editor.

Reinhold Lehr, farmer and rancher, Medicine Hat, Alberta, writes "I find the articles and charts very helpful in planning my operation."

Otto Fielman, farmer, Rosenfeld, Manitoba, says "articles that describe activities or give statistics not normally found in farm publications are most useful."

Ray D. Bollman, research economist/statistician, Statistics Canada, Ottawa, states "I noticed you mentioned a research bulletin from a university department of agricultural economics. I think it would be extremely useful if you carried a bibliography of all research publications of all departments."

Good idea, however that is not a priority with us. - Managing Editor.

John McClellan, Geographer, Brock University, St. Catharines, Ontario says he would like to see "more articles on rural adjustment and planning, articles relating to farm viability, alternative uses, and the economics of land consolidation programs." He says, "in its present form I find the publication a useful tool."

You have provided good suggestions. I will look into this with prospective authors in the Branch. - Managing Editor.

Lorne Rae, Investment Manager, Central Credit Union, Vancouver, British Columbia, writes "statistical tables are too complicated. They contain too much information and are too difficult to read. Charts should have larger print on the scale and are also difficult to interpret. Why not use ratio scales? "

This is true sometimes. Editors have a responsibility to assist authors in such matters. We have more work to do

in this respect. The editors are endeavoring to simplify, clarify, and compress complicated texts, charts, and tables. It should also be noted that a number of authors are turning out clear articles. - Managing Editor.

Jacques Yves Rioux, sheep farmer, Trois-Pistoles, says he found the article on sheep in the October, 1972 issue very useful. "This article well represents the stagnant state of this product in Canada and promotes the quality of lamb."

IN REPLY TO AUTHORS AND EDITORS REGARDING DECEMBER 73
CANADIAN FARM ECONOMICS

I have read the following article(s):

- (1) Off-Farm Work by Operators of Canadian Census-Farms
- (2) The Role of the Federal Government in Export Market Development
- (3) The Nutritive Value of Food Consumption in Canada

My comments are on article number

This article was: not useful 12345678910 very useful.

Because (e.g., The most important economic and social factors were studied. The work was well documented and the conclusions were useful to me).

Beefs Bouquets (Suggestions to authors, publications committee and editors)

My comments may () may not () be used in a future issue of this publication if the editor wishes.

NAME (Please print) Occupation


ADDRESS

Please place this sheet in an envelope and address it to:

IN REPLY,
Att: John McConnell,
Economics Branch,
C.D.A., Sir John Carling Building,
OTTAWA, Ontario, K1A 0C5

CANADA DEPARTMENT OF AGRICULTURE
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